

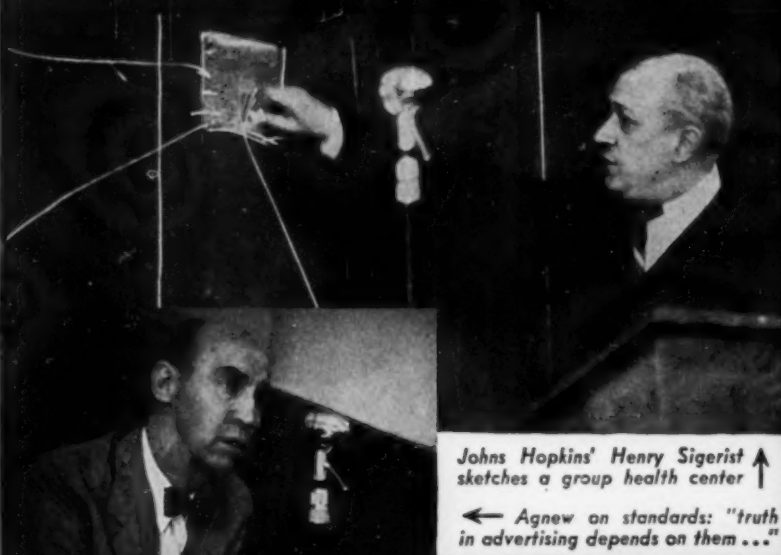
RATINGS of EXPOSURE METERS, LAUNDRY SOAPS, SUNBURN PREVENTIVES

Consumers Union

R E P O R T S

Vol. 5, No. 7

July 1940



Johns Hopkins' Henry Sigerist sketches a group health center ↑

← Agnew on standards: "truth in advertising depends on them ..."

Home Economist Louise Stanley tells what help U. S. Gov't gives →

↓ M.I.T.'s Fayette Taylor: "they would like to sell us a new car each year"



Bureau of Standards' Textile Chief Warren Emley stresses performance ↓



Between acts: CU's Warne and Kallet, Consumer Counsel Montgomery (center)

SCIENCE IN THE SERVICE OF THE CONSUMER AT CU'S FIRST CONFERENCE

Educator Cassels to Cooperator Evans: "Archimedes was first consumer tester"



IN THIS ISSUE



The purposes of Consumers Union, as stated in its charter, are "to obtain and provide for consumers information and counsel on consumer goods and services . . . to give information and assistance on all matters relating to the expenditure of earnings and the family income . . . to initiate and to cooperate with individual and group efforts seeking to create and maintain decent living standards for consumers."

TECHNICAL SECTION

Nylon Hosiery: Results of Wear Tests	3
Canned Pea Soups: Taste Test Findings	4
Laundry Soaps: Results of Tests on 44 Brands	5
Exposure Meters: Ratings of 11 Models	7
Sunburn Preventives: A Report on 13 Brands	10
Canned Tomatoes: Price & Quality Ratings	11
Shower Curtains: What to Look For	12

MEDICAL SECTION

Pepto-Bismol and Upset Stomach	13
Vitamins E & K	14

NEWS AND INFORMATION

CU's Conference and Annual Meeting	15
Your Telephone Bill By Moritz Howard	17
War & Prices: A Guide for Consumers	19

ARTHUR KALLET

Director

D. W. MASTERS

Publications Director

BOARD OF DIRECTORS: Harold Aaron, Lydia Altschuler (Staff Representative), Hartley W. Cross, Jerome Davis, Ned H. Dearborn, Osmond K. Fraenkel, A. J. Isserman (Counsel), Arthur Kallet, Paul J. Kern, Raymond E. Kirk, William M. Malisoff (Special Technical Consultant), George Marshall, Dexter Masters, Kathleen McInerney, Bernard J. Reis (Treasurer), Adelaide Schulkind (Secretary), Colston E. Warne (President), Goodwin Watson, Gerald Wendt.

CONSUMERS UNION OF UNITED STATES, INC. is a non-profit organization chartered under the Membership Corporation laws of New York State and deriving its income from membership fees. It is sponsored by more than 70 educators, social workers, authors and scientists (names on request). It has no connection, direct or indirect, with any commercial interest and accepts no advertising.

CONSUMERS UNION REPORTS is published monthly in full and abridged form. The Full Reports contain ratings and discussions of higher-priced commodities not covered in the Abridged. All members receive an *Annual Buying Guide* (Full or Abridged).

MEMBERSHIP FEES are \$3.50 a year, including subscription to the Full Reports; \$1.50, including subscription to the Abridged Reports. \$4 (Full) and \$2 (Abridged), Foreign and Canadian memberships. Reduced rates are available for groups of 15 or more. Library rates are \$3 per year (without *Buying Guide*).

CORRESPONDENCE should be addressed to Consumers Union, 17 Union Square West, New York City. CU regrets that time does not permit any answers to inquiries for special information or requests for advance test data.

Less Paper, More Words

IF YOU haven't already noticed it, let us call your attention to the fact that this issue of the *Reports* has less pages than its immediate predecessors. And if you haven't already noticed it, let us point out that there are more words on each page.

These changes can be put down in a modest niche somewhere in the lengthening list of things headed "repercussions of war."

One reason we have cut the number of pages is because war has cut imports of paper, and paper prices are on the march. The price of the kind of paper we use—and we have had to use over nine tons of it each month—has already advanced and suppliers are not encouraging about future prospects. Fortunately, we ordered a considerable supply a couple of months ago, just before prices went up. We are now conserving that supply, making it go as far as possible.

During the last war, we can't forget, paper prices jumped 150% and more.

The reason for the other change—more words per page—is to help counteract the first change. The bulk of the type is now one point (one seventy-second of an inch) smaller than heretofore, which permits an extra 150 words or so on each page with no appreciable sacrifice of legibility. At the same time contents of the Medical Section and of the News and Information Section have been reduced somewhat to allow a greater proportion of the *Reports* to be given over to the Technical Section.

And so you will find in this issue about the same amount of technical information as you have found in past issues.

With prices beginning to move up, quality beginning to move down, and consumers standing in need of all the buying guidance they can get (and a little more besides), CU has no intention of curtailing research that in these days is almost a necessity to economical buying.

Grain of Salt

PM, the 5¢ "new kind of newspaper" that made its much-publicized bow in New York City middle of last month, has already set journalistic history by carrying a whole story on CU, naming our name, telling more or less what we do, and everything. It also carried a story on wear tests of nylon stockings, in which some of the female members of the *PM* staff participated under the supervision of CU technicians, and it even came right out and told its readers that it had been trafficking with us.

This sort of thing is certainly not calculated to endear *PM* among its numerous and potent publishing colleagues who have seen fit to deny CU the right even to buy space in their pages. But then *PM* had already set itself off as a self-sufficient rarity by establishing a policy of accepting no advertising.

We think we see a connection.

The *PM* story about CU, incidentally, said that we tend to ignore certain spiritual and esthetic factors in buying, such as fancy bottles, the "lift" you get from a cosmetic that won't do what it says but costs so much you feel it must be doing something, &c.

PM wasn't quite sure that we should ignore these things (and *PM* is apparently quite unaware that we don't), and so it ended its piece with a "*PM* recommends: *CU Reports*, with a grain of salt." "What brand?" inquired a CU member, sending in a check for his renewal next day.

JULY, 1940

VOL. 5, NO. 7

Consumers Union Reports is published monthly by Consumers Union of United States, Inc., at North Broadway, Albany, N. Y. Entered as second-class matter June 1938 at the postoffice, Albany, N. Y., under the act of March 3, 1879. Copyright 1940 by Consumers Union of United States, Inc.



Consumers Union Reports is Prepared and Edited Under Union Conditions by Contract With the Book and Magazine Guild.

TECHNICAL SECTION

OF CONSUMERS UNION REPORTS

Ratings of products represent the best judgment of staff technicians or of consultants—more than 200 specialists selected for competence and freedom from commercial bias—in university, governmental and private laboratories. Samples for test are in practically all cases obtained on the open market by CU's shoppers. Ratings are based on laboratory tests, carefully controlled use tests, the opinion of qualified authorities, the experience of a large number of persons, or on a combination of these factors. Most ratings of necessity reflect opinion as well as scientific data. For even with rigorous tests, interpretation of findings is often a matter on which expert opinion differs. It is Consumers Union's pledge that such opinions as enter into its evaluations shall be as competent, honest, and free from bias as it is possible to make them.

"Best Buys" should give greater return per dollar although some products rated "Also Acceptable" may be of higher quality. Except where noted, a product rated "Not Acceptable" is judged not worth buying at any price, because of inferior quality or because it is potentially harmful.



Nylon: Results of Wear Tests

Thirty-nine women wear nylon, silk and cotton hose for CU under test conditions. Results indicate that, although nylon is stronger and more elastic than silk, it does not remove the hazard of runs

NYLON hose had its debut on May 15. It was greeted as a super fabric which would solve the hosiery problem. And the fantastic heights to which hopes and expectations rose alarmed even the hosiery manufacturers.

In trade journals as well as in newspapers (mainly business sections) some effort was made to debunk these claims; Du Pont and the hosiery manufacturers both disclaimed any responsibility for them. But relatively little of the debunking filtered through to the buying public.

At any rate, *The New Yorker* magazine reported that one woman asked a New York department store for nylon hose made of hard coal because she figured it would wear longer than hose made of soft coal; another remarked that it ought to wear forever, being made of steel.

Controlled wear tests under the supervision of CU technicians were begun as soon as nylon came into the market; they still continue. But findings by now are sufficient to permit conclusions. And the findings, plus an examination of the technical data available, provide some reason to believe that nylon may in time replace silk for hosiery just as silk sup-



NYLON RUNS

And once the yarn is broken, it runs as easily as silk. But it takes a greater pull to break it. Nylon is greatest boon for women hard on heel or toe

planted cotton. In 1919, only 4% of all hosiery manufactured was made from silk; by 1937, the figure had risen to 86%. During the same period, the proportion of stockings made from cotton dropped from 72% to 5%.

Only time will show whether silk in turn will yield its dominant place in hosiery manufacture to nylon or some other synthetic yarn. Nylon, in common with all synthetic fibers, does have certain advantages over natural products. The raw materials are easily available and factors over which man has no control do not affect its quality, making a very high degree of uniformity possible.

Nylon hose is made by various manufacturers who get the nylon yarn from the Du Pont company. The yarn, consisting of 10 filaments twisted together, is extremely fine. A 30-denier nylon yarn has 148,818 yards to the pound; a 40 denier has 111,613 yards to the pound. (Denier is the term used to designate silk, rayon and nylon yarn size; it is based on a weight for a specified length of yarn.)

The yarn is smooth, has a higher tensile strength and greater resistance to abrasion than silk. These facts have been energetically stressed in nylon promotion. Of what they mean in terms of hosiery wear, CU's wear tests may give some indication.

FOR its test, CU selected 3-thread, 51-gauge silk stockings and 40-denier, 45-gauge nylon stockings. These particular constructions were chosen because they are comparable in sheerness, expected wearing qualities and price.

Included in the wear test along with silk and nylon, was one line of cotton stockings introduced in May by Gotham and known as Government Style No. 106. Back of this stocking lies a two-year study by the Bureau of Home Economics of the U. S. Dep't of Agriculture to find a lisle hose which would meet the approval of American women devoted to the sheer-ness of silk stockings. The study—made possible by a \$60,000 Congressional appropriation prompted by the long-continued decline in the use of cotton stockings and the cotton surplus—resulted in the development of 56 different styles of lisle hose.

Style No. 106, picked by Gotham and sold at \$1 a pair, is made with a modified lace stitch using a 2-ply mercerized cotton yarn. The hose are run-resistant but not run-proof. Because of their inelasticity, a shortcoming of all cotton stockings, they bag on the legs and the consequent pulling necessary to keep them up causes early tears and runs. Since high-grade silk and nylon hose sell at comparable prices, it is hardly likely

that they will become sufficiently popular to make a dent in the cotton surplus.

In CU's wear test, 39 women wore silk, nylon and cotton hose on successive days. Questionnaires were filled out by the wearers and handed in daily. Snags, tears, holes, developed bagginess or other failures were reported immediately. After each failure the hose were examined and if possible they were mended and worn again.

As every woman knows, most silk hose fail because of runs which result from broken yarns. CU's tests show that runs will also be a major hazard for nylon wearers. Because of its higher tensile strength and elasticity, greater pull must be exerted to break nylon yarn than silk of approximately the same weight. But once a nylon yarn is broken, it runs just as easily as or more easily than silk.

Furthermore, nylon is by no means so strong or elastic as to make broken yarns infrequent. In the wear tests, silk and nylon stockings which failed after approximately the same amount of wear did so, in almost all cases, because of runs.

Nylon snags easily. As a matter of fact, the smoothness of the yarn makes it especially apt to form long unsightly snags.

For the women who wear out hose first in the heel or toe, nylon is a boon because its resistance to abrasion is almost eight times that of silk. At one stage of the wear test (an average of four wearings for each hose) only one pair out of 39 pairs of nylon had failed because of holes in the heel or toe. At the same time, six reported failures in the silk stockings which were due to wearing through in one or the other of these spots.

ALTHOUGH nylon hose have a slight tendency toward bagginess behind the knees and at the ankles, their style value compares very well with that of silk. Especially is this true in the matter of sheerness. The gauge, which is the number of loops in an inch-and-a-half of unstretched hose as manufactured, can be lower in nylon stockings than in silk because the nylon stretches slightly more and has a higher tensile strength. A 40-denier nylon hose, comparable in sheerness to a 3-thread silk, allows for good wear in a 45 gauge. On the other hand, a 3-thread silk hose would require a 51 gauge for good wear.

Another advantage of nylon, from the standpoint of appearance, is that the uniformity of the yarn prevents rings. It does away with the necessity for "three-carrier" construction, a method of manufacture in which three different silk yarns are used so that uneven areas—which cause rings—will not be close to-

gether in the finished product. For the maker, elimination of the three-carrier construction means lower manufacturing cost.

The nylon advertisements warn of a different feeling the first time nylon is worn but say that this wears off in time. Actually, whether the wearer will become accustomed to the feel of nylon will vary with different individuals. Another point worth mentioning is that the smooth surface of nylon causes the hose to slip down under the heel—particularly when round garters are worn—if much walking is done.

To sum up, definite assets of nylon hose are their sheerness and greater resistance to abrasion. But they are by no means immune to runs, the most frequent cause of hosiery failures.

If nylon, or some other synthetic fiber, is eventually to take the place of silk in hosiery manufacture, the price of the synthetic product must either approach or fall below that of silk. The differences in style value and wearing quality between silk and nylon—unlike the differences between silk and cotton—are not great enough in themselves to maintain a demand for nylon.

Canned Pea Soups—Flavor Ratings

THE manufacturers of IXL canned pea soup must have had a whimsical turn of mind when they named their brand—or else there have been some changes in the contents that aren't reflected on the label. CU's squad of 28 tasters tried out IXL in controlled taste tests covering 11 brands altogether, and 83% rated it poor. The remainder rated it fair. Not a single one found it good.

Most highly approved of the brands was *Phillips*, which got a rating of good from 49% of the tasters, fair from 30%, poor from 21%. In between *Phillips* and *IXL* the other brands ranged widely. Two to 10 sample cans of each brand were used in the tests.

As with canned chicken and tomato soups (see April and May Reports), there are no government standards to serve as a basis for rating canned pea

soups. Hence CU's taste tests, which, government graders agree, provide the best available method for rating.

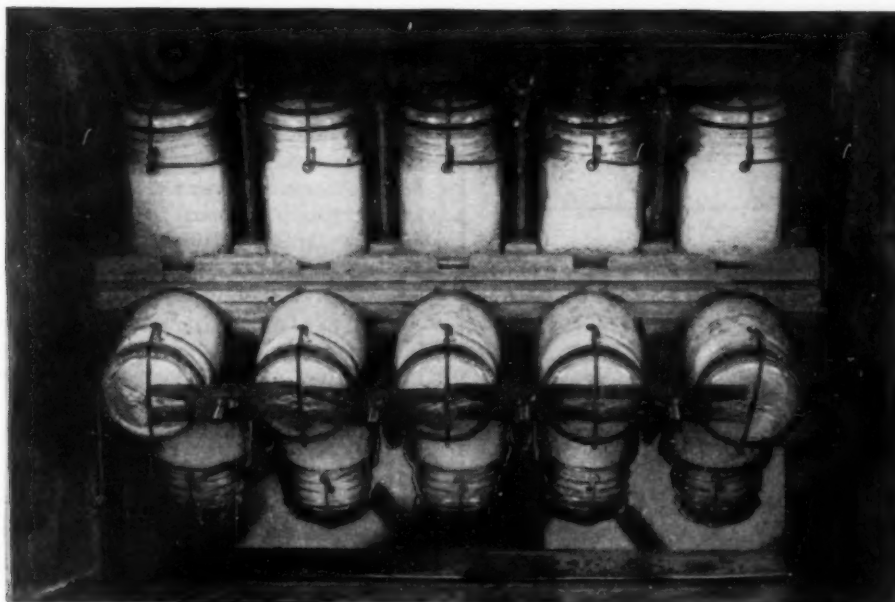
Those using the ratings, however, should be reminded that they represent merely the preponderance of opinion of the flavor jury. For the great majority of persons the ratings should serve as a useful guide. But individuals with different taste preferences should not, of course, hesitate to follow the dictates of their own palates.

The brands tested included condensed pea soups, ready-to-serve pea soups, and ready-to-serve cream of pea soups. All soups were prepared in accordance with directions on the label, and the condensed soups were diluted with an equal amount of milk. The figures for cost of a four-ounce portion include cost of added milk (at 11¢ a quart) when used.

(Listed in order of preference in flavor tests, best first. Note also cost per serving, given in last column.)

BRAND AND PACKER OR DISTRIBUTOR	Percentage of Tasters Rating Each Brand as:	Price per Can (¢)	Net Weight (oz.)	Cost per 4-oz. Serving (¢)		
	Good (%)	Fair (%)	Poor (%)			
<i>Phillips</i> Delicious Condensed (Phillips Pack. Co., Cambridge, Md.)...	49	30	21	7	10½	2.0 ¹
<i>Crosse & Blackwell</i> Ready-to-Serve Cream (Crosse & Blackwell Co., Baltimore).....	34	55	11	13	16	3.3
<i>Campbell's</i> Condensed (Campbell Soup Co., Camden, N. J.).....	31	55	14	9	10½	2.4 ¹
<i>Co-op</i> Ready-to-Serve Cream (National Coop's, Inc., Chicago)...	26	59	15	13	16	3.3
<i>Habitant</i> Ready-to-Serve (Habitant Soup Co., Manchester, N. H.)....	30	44	26	10	29	1.4
<i>Hormel</i> Ready-to-Serve (Geo. A. Hormel & Co., Austin, Minn.).....	27	38	35	15	16	3.8
<i>Heinz</i> Ready-to-Serve Cream (H. J. Heinz Co., Pittsburgh).....	31	23	46	13	16	3.3
<i>Dennison's</i> Ready-to-Serve (Butler Packing Co., Seattle).....	22	46	32	9	15½	2.3
<i>Gibbs</i> Condensed (Gibbs & Co., Baltimore).....	11	54	35	5	10½	1.7 ¹
<i>Rancho California</i> Condensed (Sunnyvale Packing Co., San Francisco)	7	34	59	5	10½	1.7 ¹
<i>IXL</i> Condensed (Workman Pack. Co., San Francisco).....	0	17	83	9	16	1.8 ¹

¹ When diluted with an equal weight of milk.



LOOK INTO A LAUNDEROMETER

Thirty washings with each brand of soap failed to reveal such differences in effectiveness as the copywriters talk of

Laundry Soaps

No one of the 44 soaps tested was found to get clothes consistently whiter or to wash faster than any other soap. Choice should be based on the kind of laundry, hardness of water, and price

THE copywriters who work in behalf of laundry soap manufacturers, have evolved four favorite methods of frightening the American housewife into buying their products: they dwell on red rough hands, or "tattletale gray," on ruining fine clothes, or spending too much time with the laundry. Each manufacturer manages to get across that only his soap will banish the particular trouble he stresses.

The facts of the matter, as revealed in CU's tests on laundry soaps, are that no brand will get clothes any whiter or any cleaner any faster than any other brand; that any pure soap is a safe soap to use for stockings, silks, woolens and the like (and many are a great deal cheaper than the well-advertised *Lux* and *Ivory*); that a soap containing one of the pyrophosphates or metaphosphates (see below) is just as safe as a "pure" soap and a lot more efficient and inexpensive to use in hard water.

"Tattletale gray," lazy suds and other difficulties in washing are the result of curds forming when minerals in hard water come in contact with soap. The harder the water the more minerals there are present; therefore, more soap must

be used to produce suds, and the curds will give a grayer wash.

The obvious solution to the problem is to soften the water. In cities where no municipal water softening is done, the water must be softened at home. Exchange-silicate softeners (*Permutit* and *Zeolite*) will do the trick cheaply and

well, but require a high initial purchase and installation cost—an excessive expense for most individual households.

Manufacturers have accordingly introduced chemicals in the soap to help soften the water. These chemicals are known as "builders"; they consist of borax, silicates, carbonates, and various forms of phosphates. Many manufacturers claim that only the builder in their soap will do the job. Unfortunately, the problem is not so simple; many built soaps fall short of their intended purpose.

In soft and slightly hard-water areas the problem is a simple one.

It is in moderately hard and very hard-water areas that the problem becomes complicated. Dainty clothes, silks, woolens and rayons are injured by the use of alkalis. It is safer and more efficient to soften water first, then use soap in the same manner as with soft water, or to use a soap with one of the metaphosphate or pyrophosphate builders.

TETRASODIUM PYROPHOSPHATE (*Co-op* Water Softener) or sodium metaphosphate (*Calgon*) form soluble compounds with hard waters which are easily rinsed out. Because of this, many soap manufacturers are using either the meta- or pyrophosphate as a builder. Soaps using these builders can be used safely with dainty clothes and with silks, woolens, and rayons. Another advantage of the meta- and pyrophosphates used either alone or as builders in soap is that the rinse water does not have to be softened. Unfortunately, very hard-water areas require more softener than is present in most soaps; these areas, therefore, will require additional water softening.

Many of the softeners (borax, carbonate, silicate or household ammonia)

Index of Water Hardness by States¹

Hardness from 1-60 (soft water)

Washington, Oregon, Mississippi, Alabama, Georgia, South Carolina, North Carolina, Virginia, Maryland, New Hampshire, Maine, Massachusetts, Connecticut, Rhode Island, and Delaware.

Hardness from 61-120 (slightly hard water)

Vermont, New York, Pennsylvania, West Virginia, Kentucky, Tennessee, Louisiana, Arkansas, Montana, Idaho, New Jersey.

Hardness from 121-180 (moderately hard water)

Florida, Ohio, Michigan, Wisconsin, Minnesota, Missouri, Oklahoma, Texas, Wyoming, Colorado, Utah, Nevada, California.

Hardness from 180 (very hard water)

Arizona, New Mexico, Kansas, Nebraska, South Dakota, North Dakota, Iowa, Illinois and Indiana.

¹ Weighted average hardness of water furnished in 1932 by public supply systems in over 600 cities in the United States (from U. S. Dep't of the Interior figures). Although these data are eight years old, the tabulation still holds good in most cases. The main exceptions would be cities which have installed water softening equipment since 1932. Ratings are in parts per million of calcium salts.

Laundry Soaps: Comparative Prices

(Listed in order of increasing cost per pound of dry soap within each group)

BRAND AND MANUFACTURER OR DISTRIBUTOR	CLAIMED NET WEIGHT (OZ.)	PRICE PER PACKAGE OR BAR (¢)	COST PER DRY POUND ¹ (¢)
Flakes Without Builder			
Kroger's Avalon (Kroger Co., Cincinnati)....	22	19	13
Ward's (Montgomery Ward).....	13	13	16
IGA ² (Independent Grocers Alliance).....	22 ³	19	16
Kirkman (Kirkman & Son, Brooklyn).....	18	19	17
Atlantic (A&P Stores).....	12.5	15	19
Blue Label (Cooperative Distributors, NYC)...	13	15	19
Lux (Lever Bros., Cambridge, Mass.).....	12.5	23	30
Ivory (Procter & Gamble, Cincinnati).....	12.5	23	31

Chips Without Builder			
Ward's ² (Montgomery Ward).....	22 ³	16.3	14
Blue Label ² (Cooperative Distributors).....	22 ³	18	15
Chipso ² (Procter & Gamble).....	22	22	18
Fels Naptha ² (Fels & Co., Philadelphia).....	21 ³	23	22

Granules Without Builder			
Chipso ² (Procter & Gamble).....	22	22	18
Co-op Olive Oil Soap (East. Coop., NYC)....	20 ³	27	24
Ivory Snow (Procter & Gamble).....	12.5	23	31

Bars Without Builder⁴			
Ward's White Floating (Montgomery Ward)...	5	4.2	14
CD White Floating (Cooperative Distributors)...	9	8	18
Par (Gordon-Allen, Ltd., Oakland, Calif.).....	6.5	7	19
Ivory (Procter & Gamble).....	10	9	20

BRAND AND MANUFACTURER OR DISTRIBUTOR	AMOUNT OF BUILDER (%)	CLAIMED NET WEIGHT (OZ.)	PRICE PER PACKAGE OR BAR (¢)	COST PER DRY POUND ¹ (¢)
--	-----------------------------	-----------------------------------	---------------------------------------	--

Flakes With Sodium Pyrophosphate				
Co-op General Purpose (East. Coop. Wholesale)	25	22	20	14

Granules With Sodium Pyro- or Metaphosphate				
Onkor Granulated (Nassour Bros., Los Ang.)	10	23	14	28
Oxydol ² (Procter & Gamble, Cincinnati).....	27	19	15	24
Par Perfect Concentrated (Par Soap Co., Oak- land, Calif.).....	10	19	15	23.5
Scotch Granulated (White King, Los Angeles)	18	25	15	31 ³
Co-op Soap Compound ² (East. Coop.).....	22	18	17	22 ³
Co-op Granulated (East. Coop. Wholesale)...	17	20	17	22 ³

Chips With Other Builders				
20 Mule Team Borax (Pacific Coast Borax Co., NYC and Los Angeles).....	7	21	16	22

Granules With Other Builders				
Kroger's Avalon ² (Kroger Grocery Co.).....	20	13	10	24
Ward's ² (Montgomery Ward).....	12	15.7	13	24 ³
Selox Speed Soap ² (Procter & Gamble).....	28	12	13	17.5
Blue Label ² (Cooperative Distributors, NYC)	16	17	14	24 ³
Rinso ² (Lever Bros., Cambridge, Mass.).....	29	19	14	23.5
Concentrated Super Suds ² (Colgate-Palm- olive-Peet Co., Jersey City, N. J.).....	28	20	15	24
Klek ² (Colgate-Palmolive-Peet Co.).....	19	17	17	19
Silver Dust ² (Lever Bros.).....	12	23	22	22

Bars With Other Builders⁴				
Ward's White Naphtha ² (Montgomery Ward).	28	3.2	8	9
IGA Family Yellow Laundry ² (Ind. Groc. All.)	15	3.3	9	8
Co-op Brown Laundry (East. Coop. Wholesale)	9	5	9	12
Fels Naptha ² (Fels & Co., Philadelphia).....	12	4	10	10
OK (Procter & Gamble).....	11	4	10	7.5
Kirkman's Borax (Kirkman & Son, Brooklyn)	8	4	11	8
PGW White Naphtha ² (Procter & Gamble)...	24	5	13	10
White King Laundry ² (Los Angeles Soap Co.)	16	4	14	7
Octagon ² (Colgate-Palmolive-Peet Co.).....	8	7.5	5	14

¹ Based on dry soap actually present. Inert filler, moisture, towels, glasses and other non-soap ingredients or premiums excluded. ² Contains an excess of inert filler. ³ Short-weight. ⁴ Net weights given are actual; manufacturers did not state them.

when added to hard water will form a curd, which is comparatively easy to remove before soap is added. Simple home experiments must be carried out to determine how much softener to use: add measured amounts of softener to a definite amount of water and keep adding in small portions until no further curd is formed. The total amount of softener used per quantity of water makes up your individual formula.

The cost to the consumer of soaps built with sodium metaphosphate or tetrasodium pyrophosphate is not more than that of other built soaps, and in many cases it is less. In all cases, they cost less than pure soaps and may therefore be recommended for use in both soft- and hard-water areas.

Forty-four soaps (nine flakes, five chips, 17 granules, and 13 bars) were tested for purity, for claimed weight against actual weight, and for detergency (cleansing power). All of the soaps tested were within the allowable limits for purity.

Ten of the packages were found to be short-weight from 1/2 ounce to 1 1/2 ounces. But soap absorbs and gives off moisture according to the surrounding atmosphere, and some soaps which were short-weight showed less moisture present. All of the soaps were rated in price according to dry weight per pound.

The detergency tests were conducted on standard soiled cotton sheeting and 30 washings were used for each soap. The washing was done in a laundrometer which gave the same conditions of temperature and mechanical action to each washing. Readings were taken after one, two, three and four washings. The results of these tests showed such small differences as to indicate that, under the same conditions of mechanical action, soap concentration, temperature and water hardness, all the soaps listed here will have about the same detergent value.

One package of each brand was used in the tests, except where decided short-weight was found, when an average of three boxes was taken.

There is definite need, incidentally, for regulation of soap packaging. Soaps are often sold in odd-sized boxes such as "1 pound, 7 1/2 ounces," making it difficult for the consumer to compare prices. There is no good reason why a few standard sizes should not be used. Net weights when given are usually made as obscure as possible, and bar soap manufacturers do not trouble to give this important information at all. For such reasons, the figures for actual cost per dry pound given in the listings should be of special value when purchases are made.

Organized Labor in the Soap Industry

THE "Big Three" in the soap industry—Lever Bros. Co., Colgate-Palmolive-Peet Co. and Procter & Gamble—produce in the neighborhood of 80% of the soap manufactured in this country. A considerable share of the soap represented by this percentage is made under union conditions, since all plants of the Lever Co. are organized, and half of the Colgate-Palmolive-Peet plants. Only one of the plants of Procter & Gamble, biggest of the three, is unionized.

Leading unions in the soap industry are the Soap, Glycerine and Edible Oil Workers (AFL) and the United Soap and Glycerine Workers (CIO).

Briefly, labor conditions in the leading soap manufacturing companies are as follows:

Colgate-Palmolive-Peet Co. Two plants of this company operate under union contract (CIO). So far as CU was able to learn, its other two plants are not organized. The union at the Kansas City, Kans., plant states that the "wages are generally above the average for this vicinity."

Kirkman & Son. This company reports that it operates under contract with the Independent Union of Kirkman Employees, Inc., and that the minimum wage is 43¢ per hour for women and 62½¢ per hour for men.

Lever Bros. All five plants operate under union contract (AFL). The minimum wage rate at the different plants varies. At the largest plant, the minimum wage is 52¢ per hour for women and 70¢ per hour for men, the union reports.

Los Angeles Soap Co. Operates under union contract (AFL). Minimum wage is 45¢ per hour for women, 62½¢ per hour for men, according to the union.

Pacific Coast Borax Co. Operates under union contract (AFL). The union reports a minimum wage rate of 60¼¢ per hour for women, 73¢ per hour for men.

Procter & Gamble. Portsmouth, Va., plant operates under union contract (AFL). The union reports that the minimum wage rate is 40¢ per hour.

CU's labor notes are published for the guidance of consumers who wish to know the labor conditions under which the products they buy are manufactured.

The labor ratings are prepared independently of the technical work and do not in any way affect the technical rating of a product.

Photoelectric Exposure Meters

It's hard to get the perfect negative, but an exposure meter helps. CU tested 33 models of 11 brands, rates them here for accuracy, sensitivity, legibility and ease of handling

AN exposure meter can have a dozen gadgets and features, useful and useless. It can be beautifully built and streamlined. Reading methods can be simplified so that the beginner can learn to operate it in a few minutes. But in the final analysis, its most important attribute is accuracy: will the meter give readings that lead to good negatives?

"Good," and not "perfect," is used intentionally. Photographers who hope to find in an exposure meter the panacea for all their picture-taking problems are doomed to disappointment. For the exposure meter is no more than an accessory; it can do no more than supplement the camera, the film and the lighting. But in doing that, it can do a great deal. It can help you make the best possible negative with the material at hand.

Next to accuracy, sensitivity is the factor with which amateurs are most concerned. With the high-speed films obtainable today, and with increasing use of

the miniature camera and its high-speed lens, photographers demand a meter which will give readings in relatively poor light.

Besides sensitivity to low intensities, it is also important that the meter should give readings for all normally encountered high intensities: snow scenes and beach pictures in bright sunlight, for example. In a few meters, the needle reached the top of the scale at intensities well below the maximum encountered in picture taking. Two meters, the *Weston Master* and the *GE*, solve the problem (theoretically at least) by use of a baffle arrangement which partially covers the cell for high intensities and is removed for dim light. Some makers recommend use of the incident light system for very low light intensities.¹

Although it is unnecessary to clutter up the meter's scale with numerous and insignificant divisions, it is nevertheless important that there be enough so that a significant change in light intensity will change the reading on the meter. The *GM Junior* is notably deficient in this respect, with only 10 divisions to cover the entire scale.

Whether a meter is sufficiently accurate must be considered in relation to its reliability for taking color pictures as well as for black and whites. The reason is simple enough: in order to make successful color pictures, exposure must be very accurate, whereas black and white film has a great deal of latitude, so that it is possible to over- or underexpose considerably without affecting seriously the quality of the final print or enlargement.

To check the meters on actual picture-making qualities, CU's tests included several series of pictures on both indoor and outdoor *Kodachromes*, as well as a series taken under different lighting conditions on three types of black and white film: *Eastman Super XX*, *Agfa Plenachrome* and *DuPont Parpan*.

¹ The incident light system consists in pointing the meter from the object being photographed to the light source rather than at the object, obtaining a reading for the source.



GENERAL ELECTRIC

Highest quality—also heaviest (cast-iron hood contributes to the 10¼ oz. weight). Chromium calculating scale is hard to read

Let us assume, for a moment, that an ideal meter exists, a meter which gives accurate readings at all points on the scale. An exposure meter may differ from this ideal in several ways. In the first and simplest case, the meter may read either consistently higher or consistently lower than the ideal. For correct exposures, it is then necessary to apply a correction factor—for example, to use the next higher or next lower f: stop or shutter speed than the one indicated.

But the meter may vary from the ideal in differing amounts at certain sections of the intensity scale. And this presents more difficulty. For example, the meter may read too high at the top of the scale and too low at the bottom. Such a condition is not easy to correct.

A meter which reads erratically is, in fact, virtually useless for practical purposes; the owner of such an instrument might as well go back to the primitive but cheaper method of squinting at the sun and setting shutter speeds and f: stops by guesswork.

Angle of view—the area “covered” by the meter—is a factor of great importance. Ideally, the angle should be small, so that the meter will take in no more territory than the important portions of the subject which is being photographed.

To determine angle of view in CU's tests, the meter was placed on a rotating turntable at a fixed distance from a source of light. Readings were taken with the meter turned at various angles from the light source. Both horizontal and vertical angular response were obtained.

Relationship between sensitivity and angular response is clear. If the angle is large, the meter takes in light not only from the subject being photographed but also from other sources, such as sky and background—which makes the meter seem more sensitive than it is.

The factor of fatigue, while not so important practically as those factors already mentioned, is still significant. Fatigue in a photoelectric cell is the property which makes it decrease in response to light after long exposure to high intensities—such as leaving the meter out in the sun for some time. The light cells can and do recover from fatigue when they are kept in the dark, but such a process is time-consuming and may ruin an afternoon of picture taking.

Prevention, of course, is the best cure. Meters do not show fatigue in the course of ordinary picture taking, but after long continued exposure. The ounce of prevention, then, consists simply in keeping the meter in a case or pocket between pictures. In a two-hour fatigue test, one meter decreased in sensitivity more than



WESTON MASTER

Third highest quality. Handsome, legible, easy to operate. But samples tested tended to read high

50% in the first 10 minutes of exposure; others gave their original readings at the end of two hours.

FIRST elements in convenience are that the meter should be small and light, although it is obvious, of course, that compactness should not be achieved at the expense of accuracy. On the other hand, there seems to be little excuse for adding a heavy cast-metal hood to a meter (as GE has on its new model). The weights of the meters examined ranged from a minimum of something over 3½ ounces for the GM Junior, the De Jur 5A, the GM Standard and the Marvel, to 10¼ ounces for the new GE.

Perhaps more significant is the question of legibility. All exposure meters have five basic scales, variously arranged. The indicator scale, over which the pointer moves, is usually separate from the others and divided into a number of divisions, calibrated either in arbitrary units, in foot-candles, or candles per square foot.

The divisions of the indicator scale should be so arranged and numbered that there is no possibility of confusion as to which division the pointer is indicating. Many meters—the Weston Universal 650 is an example—are crowded at one end or the other of the scale, with so many divisions cramped into a small space that it is sometimes impossible to determine which of three the pointer is indicating.

Best arranged of the indicator scales is that of the Weston Master. When the

baffle over the light cell is closed, divisions below 50 are cramped, but opening of the baffle automatically brings into place a new scale which registers low intensity values over a wide scale. GE is the other notably clear-reading meter in this respect. The pointer scale is evenly divided and all parts of it are equally legible.

Besides the indicator scale there are four others: emulsion speed, shutter speed, f: stop, and light setting. The latter is usually a duplicate of the indicator scale, except that the divisions are in most cases evenly spaced.

It is to the other three scales (emulsion, shutter and f: stop) that further attention must be given. In the first place they must also be easily legible; the numerals should be as large as space permits. Here again, sometimes too many numbers are crowded in, and the result is difficulty in making quick readings, particularly under poor light conditions. Sacrificing legibility to general appearance seems a poor policy, yet this is what GE has done to its new meter. Numerals are chromium on a glossy black, and in direct sunshine the reflections are dazzling but hardly practical.

Besides being legible, the top and lower limits should be so fixed that the scales include all values of f: stop and shutter speed in general use, and of emulsion speeds in use with an allowance for future developments. Further, there should be enough divisions of the commonly used shutter speeds, f: stops and emulsion values without necessity for calculation of values between those given.

The Photrix SS is notably deficient in this respect. Although the scale ranges are satisfactory, the divisions within them are so large that a number of commonly used emulsion speeds and shutter speeds are lacking, and a complicated process is required in order to calculate proper settings for the missing values. The GE has a similar complication. On this meter relatively few divisions are given numerical values, and although there are indications between the numbered divisions, frequently their exact values are difficult to guess.

Then the matter of operation. First it should be possible to move the scales without breaking a fingernail (as on the emulsion setting of some samples of the Weston 650); at the same time they should not be so loosely set that they are likely to be moved out of place by a chance touch (as on the Photrix SS).

The slide arrangement should be made as simple as possible, so that even an inexperienced operator can learn the steps of setting in a few minutes. And, of course, the number of steps necessary to obtain a reading should be cut to a minimum.

Current models of exposure meters have their scales constructed in two ways. One, used on the two *Weston Masters* and the *GE*, involves setting the emulsion speed of the film used (this is done only for the first picture on a roll or when a change is made from daylight to artificial light), then pointing and reading the meter, setting an arrow to the reading indicated, and finally reading off the desired combination of shutter speeds and f: stops.

The other method, used on all the other meters examined, consists of pointing and reading the meter, setting the light reading opposite the emulsion speed of the film used, and then reading off combinations of shutter speeds and f: stops.

The question of which method is better is a matter of individual choice. Those who favor the *Weston* method find it simpler to set an arrow opposite a number than to set one number in a series opposite another number in a different series; also, particularly for people who own 36-exposure cameras, it is helpful to be able to set the film speed and forget about it rather than to try to remember the speed of the film in the camera before each exposure. The other method has the advantage of requiring one less step in setting the first picture on the roll of film.

A relatively minor factor, but one which can cause a great deal of discouragement, is that of simple mechanical coincidence of the scales; that is, after the original setting is made, f: stops and shutter speeds should be in perfect alignment. Sometimes, as on the *GM* and the *GE*, the two scales are not meant to line up. But if, as on the *Super Electrophot*, the scales are designed to coincide and then fail to do so through simple careless draftsmanship, the user has just cause for indignation.

Several other factors were considered in the ratings: the time the pointer takes to come to rest (damping), additional uses of the meter (with movie cameras and enlargers), the possibility of operating the meter with one hand while holding the camera in the other, placement of the moving scales with relation to the pointer, &c.

The following ratings are in order of merit, without regard to price. Three samples of each meter were used in the tests.

Good

In order of merit without regard to price. (Note that this is not order of accuracy. See comments on accuracy under each meter.)

General Electric—New Model (General Electric Co., Schenectady, N. Y.). \$21.

Sensitivity to low light intensities not as good as that of *Weston Master* for ordinary use, but hood can be removed and meter used for incident light measurement on low intensities. Baffle, which can be opened for medium light intensities, more accurately constructed than that of *Weston Master*, but not perfect on all instruments. Highly accurate. Angle of view excellent. Legibility of indicator scale excellent, but poor on calculation scales. Meter large and heavy.

Weston Jr. (Weston Electrical Instrument Corp., Newark, N. J.). \$15.50. Sensitivity only fair, but adequate for most normal light intensities. Angle of view excellent. Gave highly accurate readings for color and black and white film. Legibility excellent on all scales, but bottom of indicator scale somewhat crowded. Operation simplest of all meters tested. Comparatively small and compact.

Weston Master. \$24. Very sensitive in dim light. Calibration of the baffle on the three instruments examined was not sufficiently accurate; therefore two different readings were obtainable at points where instrument could be operated with baffle either opened or closed. Angle of view excellent. Meters tended to read high, requiring use of film speed rating lower than indicated to avoid underexposure. This is a serious shortcoming except for persons who take many pictures and are willing to work out the necessary corrections. Legibility, construction and general ease of operation excellent. Meter large and rather heavy.

As We Were Saying...

CHIMING in with CU's report on laundry soaps (see page 5), Federal Trade Commission Stipulation 2867 arrives as we go to press. In it Colgate-Palmolive-Peet agrees to drop (among others) the following claims:

That *Concentrated Super Suds* destroys all germs which lurk in every family wash, or that dishes washed with this soap require no wiping.

That *Kirkman Soap Flakes* keep your hands soft and white, or that lingerie washed with this product will keep its brand-new appearance almost forever.

That *Palmolive Soap* contains protective qualities not present in other soaps; that it is responsible for the complexion of the Dionne quintuplets; that use of this soap will keep the skin young; or that it is composed wholly or in part of edible olive oil.

That *Cashmere Bouquet* soap will remove every bit of dirt or cosmetics from every pore, or that it will cause the skin to become alluring, clear or smooth, where such results will not be achieved by cleansing the skin.

Weston Universal 650. \$19.95. Sensitivity in dim light fair. Gave accurate values for color and black and white film. Indicator scale cramped at bottom, but legibility of other scales good. Angle of view excellent. Fatigued rapidly in bright light.

Fair

De Jur 5A (De Jur Amsco Corp., Shelton, Conn.). \$11.50. Good accuracy for color and black and white film. Sensitivity to dim light only fair. Angle of view too large. Legibility good. Meter very small and light in weight.

Photrix SS (distrib., Intercontinental Marketing Corp., NYC). \$18.75. Incident light method must be used for dim light. Accuracy fair. Angle of view too large. Legibility on all scales excellent, but the number of divisions given inadequate. The needle was poorly damped, and operation of the instrument was time-consuming.

Poor

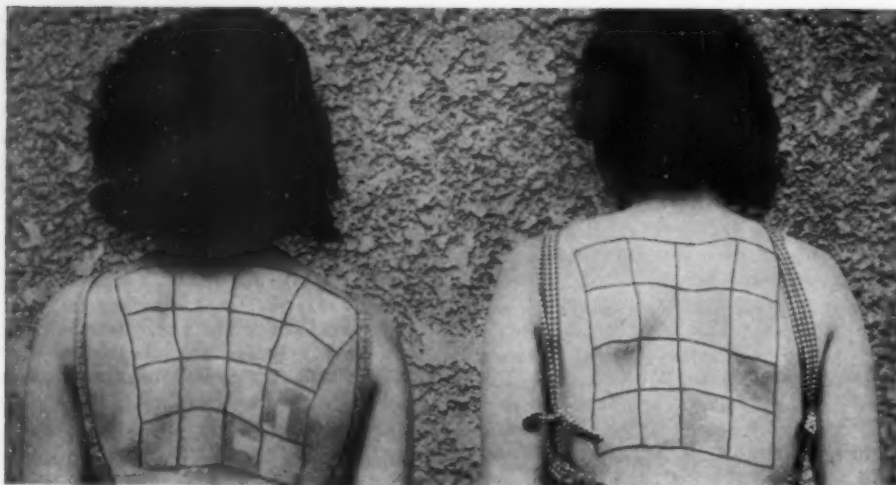
Marvel (distrib., Sears-Roebuck). \$6.95 plus postage.

GM Standard (GM Laboratories, Inc., Chicago). \$6.95. These two meters were apparently identical in design and construction. Sensitivity to dim light fair. Accuracy inadequate for color photography but fairly satisfactory for black and white. Graduations at top and bottom of indicator scale rather cramped. Sliding scales were on back of instrument, and were poorly designed, so that the scales did not coincide. Angle of view rather large. Small and light in weight. Price considered, these meters are acceptable buys.

GM Jr. \$5.95. Not sensitive to low light intensities, and unreliable for color photography. Angle of view rather large. Scales inadequate and poorly designed. Although this meter was inexpensive, it was not considered worth buying even at the price.

Super Electrophot (J. Thomas Rhamstine, Detroit). \$14.50. Sensitivity in dim light satisfactory, but meter went off scale under normally encountered high light intensities. Angle of view too large. Read consistently low (gave overexposed negatives) throughout entire range, requiring correction in use. Arrangement of indicator scale poor; readings at top of scale confusing. Needle was poorly damped, and operation of the instrument was time-consuming. Calculator scales did not coincide as they should in a meter of this design.

De Jur Critic (De Jur Amsco Corp., Shelton, Conn.). \$18.75. Fair accuracy. Angle of view too large. Good sensitivity with incident light method. Two of meters examined were wholly unusable; one gave no readings, another had a needle with tendency to stick.



"Guinea pigs" squared off for CU's sun exposure test

Sunburn Preventives

New tests of brands found "good" last year show that most still afford "good protection." But no preparation can be relied on to prevent burning if exposure is too long

OF THE 37 brands of sunburn preventives tested by CU last year (see July 1939 Reports), 13 were found to give "good protection." Check tests just completed on this group showed that eight of the 13 still gave "good protection"; two gave only "fair protection." Three were no longer available.

For the 1939 report CU tested samples of the sunburn preventives in two ways: by spectrographic tests (made by passing a beam of ultra-violet light through a thin film of the preventive) and by skin tests. Since good correlation was found between the two methods, only the skin tests (involving actual sun exposure) were made this year.

The way you react to the sun's rays depends on a number of factors. For one thing, your skin may be the kind which cannot tan, which merely burns each time it is exposed to the sun. Or it may freckle, or it may tan unevenly. If like most people, you are able to tan, whether you do or not may depend on the kind and intensity of the sunlight, which in turn depends upon the season, the latitude, altitude, weather, and the amount of smoke and dust in the air.

Sunburn preventives come in the form of oils, creams, lotions or tinctures. Although the oils have a greater resistance to water than most preparations of other types, they are also messier and have lately been losing in popularity. Some lotions and creams cover the skin with a nearly opaque film, while others stop only the burning and tanning rays.

CU knows of no preparation which will permit only tanning, without burning, or which will safely promote tanning. The portions of sunlight which cause burning and tanning are so nearly the same that there is no practical possibility of securing a tan without exposure to rays which can also cause burning. The best a sunburn preventive can do is to permit you some degree of control over the amount of burning-tanning rays which reach your skin. The most efficient way to tan is to limit each exposure, with or without a preventive, so that it produces no more than a very faint redness.

There are two methods by which the use of a sunburn preventive can help you to attain a tan without the painful burn. First, you can expose yourself for a limited period without protection, and then use a preventive rated "Good Protection." Second, you can apply a preventive rated "Fair Protection," and let a fraction of the burning rays reach your skin during the entire period of exposure. The difficulty with the second method is that you won't know what amount of these rays comes through.

A sunburn preventive is not satisfactory merely because it absorbs the burning rays of the sun. It should also have a satisfactory color, odor and physical consistency. It should not cause permanent stains on bathing suits or beach clothing. If it is liquid it should leave a uniform film on evaporation—otherwise it may produce a mottled tan. It should

resist the action of fresh and salt water, air and sunlight. Finally, it should not have a tendency to irritate the skin or to cause allergic reactions, nor to make the skin greasy or sticky, nor to clog the pores and produce boils and other infections.

Correct packaging is another important item. Semi-solid preparations are less likely to become contaminated with sand if they are packed in tubes rather than in jars. Tubes with attached caps are convenient. Liquids should come in bottles with narrow dispenser openings which help minimize waste.

Remember that sunburn preventives are not the same as sunburn remedies, despite the fact that some preparations can serve both purposes. If you get a burn, treat it as any other burn (see 1939 Buying Guide for recommendations on treatment). Remember that first exposures to strong sunlight must be limited if you burn readily, even when the most effective preventives are used.

Good Protection

(In alphabetical order)

Ardena Sun-Pruf Cream (Elizabeth Arden, NYC). 3 1/16-oz. tube, \$1; cost per oz., 33¢.

Ayer Sun Cream (Harriet Hubbard Ayer, NYC). 1 1/2-oz. tube, 85¢; cost per oz., 57¢. Greasy. Tube has convenient built-in cap. Manufacturer's address not declared on label, as required by law.

Coty Suntan Lotion (Coty, NYC). 3 3/4-oz. bottle, \$1; cost per oz., 27¢.

Daggett & Ramsdell Perfect Sun Lotion (Daggett & Ramsdell, NYC). 3 1/2-fl. oz. bottle, 75¢; cost per oz., 21¢.

Elmo Sunburn Cream (Elmo Sales Corp., Philadelphia). 4-fl. oz. bottle, \$1; cost per fl. oz., 25¢. Somewhat greasy.

Hudnut Sun Tan Oil (Richard Hudnut, NYC). 3-fl. oz. bottle, 75¢; cost per fl. oz., 25¢. Very greasy. Presents unpleasant mottled yellow-green appearance when applied on skin.

Noil Liquid Sun Shade (Norwich Pharmaceutical Co., Norwich, N. Y.). 1 1/2-fl. oz. bottle, 35¢; cost per fl. oz., 23¢. Thin alcoholic liquid, somewhat less convenient to apply than lotions and creams. Odor, found "unpleasant" last year, has been changed and should now be agreeable to most people.

Quinlan Sunburn Lotion (Kathleen Mary Quinlan, Inc., NYC). 4-fl. oz. bottle, \$1; cost per fl. oz., 25¢.

Fair Protection

(In alphabetical order)

Dorothy Gray Beach Oil (Dorothy Gray, NYC). 4-fl. oz. bottle, \$1; cost per fl. oz., 25¢. Greasy.

Smoothtan (Charles of the Ritz, NYC). 4-fl. oz. bottle, \$1; cost per fl. oz., 25¢. Greasy.

Canned Tomatoes—Price & Quality Ratings

BELOW are score ratings of canned tomatoes, made by U. S. Dep't of Agriculture graders. The following factors were each given equal weighting: percentage of whole tomatoes, solidity, color, absence of defects and flavor. There are three acceptable grades: A (scoring from 90 to 100), B (75 to 89) and C (60 to 74).

Tomatoes which are mushy or have too low a portion of whole tomatoes are considered Substandard, regardless of other factors. Such tomatoes are always below the standard

in drained weight. They may be perfectly edible, and may even have excellent flavor, but they are generally either carelessly handled or overcooked. They represent good values for such things as soups or sauces, provided that their prices are low.

The prices and scores given in the table below are the averages for all the cans tested. From two to five cans were tested of each of the 66 brands included in the report (a total of 206 cans).

BRAND AND PACKER OR DISTRIBUTOR	AVERAGE COST PER NO. 2 CAN (¢)	AVERAGE SCORE
Grade A		
<i>Grisdale</i> ¹ (Gristede Bros., NYC).....	15	91
<i>Masterpiece</i> (Calif. Sanitary Can. Co., Los Angeles)	12 ²	91
Grade B		
<i>All Good</i> (F. M. Ball, Oakland, Calif.)	11 ²	79
<i>Apté</i> (Apté Bros. Can. Co., Miami)....	13 ²	82
<i>Bernice</i> (Krasne Bros., NYC).....	12	84
<i>Blue & White</i> (Red & White Corp., Chicago)	14	82
<i>Bohack's</i> ¹ (H. C. Bohack, Brooklyn)...	13	86
<i>Bonnie Best</i> (Younglove Groc., Tacoma)	10	79 ²
<i>Briardale</i> ¹ (United Groc., San Francisco)	13	86
<i>Co-op</i> (Central Coop. Wholesale, Super- rior, Wis.)	12	85
<i>Dellford</i> (Middendorf & Rohrs, NYC)...	12	85
<i>Elmdale</i> (Nat'l Retailer-Owned Groc., Chicago)	9	79 ²
<i>Exquisite</i> (Santa Cruz Fruit Pack. Co., Oakland, Calif.)	13 ²	83
<i>F&P</i> (Filice & Perrelli, Richmond, Calif.)	10	85
<i>Fairway</i> (Twin City Wholesale Groc., St. Paul)	15 ²	83
<i>Grand Union</i> (Grand Union Co., NYC)	13	80
<i>Hart</i> (W. R. Roach, Grand Rapids, Mich.)	13	83 ²
<i>Hunt's Supreme</i> (Hunt Bros., San Francisco)	14 ²	83 ²
<i>Iona</i> ¹ (A&P, NYC)	7	80
<i>Iris</i> ¹ (Haas, Baruch, Los Angeles).....	13	86
<i>Krasdale</i> (A. Krasne, NYC).....	13	83
<i>Kuner's</i> (Kuner Pickle Co., Brighton, Colo.)	8 ²	79
<i>Lily White</i> ¹ (R. H. Macy, NYC).....	12	82
<i>Mayflower</i> (Marshall Can. Co., Mar- shalltown, Iowa)	9	78 ²
<i>Monarch</i> (Reid, Murdoch, Chicago)...	15	85
<i>Pine Cone</i> (Albert W. Sisk, Preston, Md.)	9	77
<i>Plee-Zing</i> (Plee-zing, Inc., Chicago)...	12	77
<i>Prattlow</i> ¹ (Pratt-Low Preserv. Co., Santa Clara, Calif.)	12	83
<i>Premier</i> (F. H. Leggett, NYC).....	12	87 ²
<i>Pride of the Farm</i> (Thos. Roberts, Philadelphia)	8	80 ²
<i>Red & White</i> (Red & White Corp., Chicago)	14	83
<i>Red Hill</i> (Gen. Food Prod., Oakland, Calif.)	12 ²	85
<i>Reeves' Best</i> ¹ (Daniel Reeves, NYC)...	13	89
<i>Rock Dell</i> ¹ (Younglove Groc., Tacoma)	12 ²	89
<i>Royal Scarlet</i> (R. C. Williams, NYC)...	15	88
<i>S&W</i> (S&W Fine Foods, San Francisco)	14	89
<i>Saracen</i> (Emery Food Co., Chicago)...	9	81
<i>Staff-o-Life</i> (Canners Exchange, Spring- field, Mo.)	9	81

BRAND AND PACKER OR DISTRIBUTOR	AVERAGE COST PER NO. 2 CAN (¢)	AVERAGE SCORE
<i>Sultana</i> ¹ (A&P, NYC).....	9	83
<i>Sun-Blest</i> (Jacobson Shealy, San Fran- cisco)	15	86
<i>Sweet Girl</i> (Sterling Food Prod., Chi- cago)	13	80
<i>Trupak</i> ¹ (Haas Bros., San Francisco)...	11	88
<i>White Rose</i> (Seeman Bros., NYC).....	12	82 ²
<i>Yellowstone</i> (Paxton & Gallagher, Omaha)	15	82

Grade C

<i>Bound's</i> (Geo. A. Bounds, Hebron, Md.)	10 ²	77 ¹
<i>Encore</i> (Snider Pack. Corp., Rochester, N. Y.)	13	81 ¹
<i>Engelman Gardens</i> (Engelman Can. Co., Elsa, Texas)	7	77 ¹
<i>Happy-Vale</i> (Emery Food Co., Chicago)	9	75 ¹
<i>Lily of the Valley</i> (Snider Pack. Corp., Rochester, N. Y.)	12	83 ¹
<i>Peninsula</i> (Peninsula Pack. Co., Berlin, Md.)	8	73
<i>Phillips</i> (Phillips Pack. Co., Cambridge, Md.)	9	76 ¹
<i>Rose-Dale</i> (Libby, McNeill & Libby, Chicago)	10	78 ¹
<i>Yacht Club</i> (Reid, Murdoch, Chicago)...	11	78 ¹

Substandard

The following were Substandard because one or more of the cans tested had unsatisfactory solidity:

<i>Cresca</i> ¹ (Cresca Co., NYC).....	29 ²	81
<i>Del Monte</i> (Calif. Pack. Corp., San Francisco)	12	80 ²
<i>Economy</i> ¹ (Equitable Cash Groc., San Francisco)	10 ²	73
<i>Freshpak</i> (Grand Union Co., NYC)...	13 ²	73
<i>Jack Sprat</i> (Jack Sprat Foods, Mar- shalltown, Iowa)	11	81
<i>Klondike</i> (Klondike Can. Corp., Lafa- yette, Ind.)	11	79
<i>Libby's</i> (Libby, McNeill & Libby, Chi- cago)	11	79 ²
<i>Sanitarium</i> ¹ (Battle Creek Food Co., Battle Creek, Mich.)	18	76 ²
<i>Silver-Dale</i> (Emery Food Co., Chicago)	10 ²	79
<i>Snider</i> (Snider Pack. Corp., Rochester, N. Y.)	10	77 ²
<i>Stokely's</i> (Stokely Bros., Indianapolis)	13	83 ²
<i>Val Vita</i> (Val Vita Food Prod., Fuller- ton, Calif.)	12 ²	77

The following was Substandard because one can tested was a "sweller":

<i>Wellman</i> (Wellman-Peck, San Francisco)	11	
--	----	--

¹ Labeled "Fancy" or "Grade A." ² No. 2½ can (1 lb., 12 oz.). ³ Quality variable. ⁴ Labeled "Standard" or "Grade C." ⁵ 16-oz. can. ⁶ Labeled "Choice" or "Grade B." ⁷ Score Grade B; rated Grade C because of low percentage of whole tomatoes.

Shower Curtains

A survey of the relative merits and demerits of various shower curtain fabrics . . . how to judge a curtain in the store . . . what to look for at seven different price levels

BASIC requirements of any shower curtain are that it be water-repellent, colorfast to hot soapy water and sunlight, capable of resisting the ravages of moisture, heat, sunlight, and mildew. If the curtain is made of more than one piece of fabric, the seams should be strong; the metal rings at the top should be inserted in a reinforced strip or hem so that they do not readily pull out; the curtain should be adequately weighted at the bottom to prevent excessive flapping; the side hems should be well enough made so that the curtain will not tear easily.

How the manufacturer makes up his curtains will determine the degree of satisfaction you get on some of these counts; the nature of the fabric he uses will determine it on others. Although only about a half-dozen fabric suppliers serve most of the shower curtain manufacturers, curtains are sold in the stores largely as unbranded or private brand items. This report, therefore, presents no ratings of the finished products; it is intended, instead, to help you in making the choice yourself. The important features of workmanship and construction, noted above, you can determine pretty

well by observation. What follows is a discussion of the fabrics used in shower curtains, based on tests and examinations of leading types.

Essentially, the fabrics used divide up into three kinds: solid sheeting and synthetic films, coated fabrics, and treated fabrics. Each of them should give satisfactory service if properly cared for.

Treated Fabrics

Cotton broadcloth, rayon broadcloth, cotton and rayon mixtures, ducks, taffetas, moires, &c. are treated with chemicals which make them water-repellent to various degrees. In general, they are stronger than coated fabrics because they are usually made of heavier material. They are not adversely affected by the heat of the room or of the water, and the chemicals used often act as mildew preventives.

You must take care, however, to keep soap from drying on these curtains, because mildew grows on the soap and attacks the fabric. Further, the curtains should be kept clean and dry when they are not being used. The water-repellent factor may be lowered in use.

A Note on Comparative Costs and Utility of Shower Curtains

PRICES for shower curtains range from \$1 to about \$7, depending on the type, design, and method used in applying the color. For all around utility and long wear, treated cotton, cotton-and-rayon mixtures and silks are "Best Buys." Next come the coated cotton, cotton-and-rayon mixtures and silk, followed by the treated rayons and coated rayons. The solid rubber sheet, if heavy enough, compares favorably with the coated fabrics. The lightweight rubber and pliofilm require special care if they are to last long.

If price is no factor, good durability plus excellent design, appearance and workmanship are obtainable in the Koroseal products. Plioilm is low priced and will give fairly satisfactory service—price considered—if it is not exposed to direct sunlight. The prices which follow indicate the different types obtainable under the various price ranges:

- \$1—Some oiled fabrics, treated canvas (lightweight), plioilm.
- \$2—Oiled silks and ducks.
- \$3—Better grades of oiled silks; coated silks, and silk and rayons; rubber sheets.
- \$3.50—Water-repellent treated rayon taffetas; coated silks and rayons.
- \$4—Heavier grades of rubber sheets; treated acetate moires (water-repellent); heavier grades of coated silks, and silks and rayons.
- \$5—Koroseal solid colors; heavier grades of rubber sheets, coated silks, silks and rayons.
- \$6—Koroseal patterns; heavier grades of rubber sheets; rubberized "terry cloth" (actually a napped knit fabric).
- \$7—Koroseal patterns.

Coated Fabrics

These include a large variety of base fabrics, including sheer silks, rayons, silk and rayon mixtures, cotton lawns, muslins, lightweight broadcloths, taffetas, moires, &c. The coatings also are of many types: pyroxylin, synthetic resins, rubber, Koroseal, drying oils, &c.

Such curtains are generally waterproof,¹ but of much lower strength than treated fabrics. The initial fabric is weaker, and the coating is relied upon to give needed additional strength. Although the initial strength is adequate, once the fabric is broken at any point it will continue to tear very easily.

Pyroxylin and synthetic resin types are not appreciably affected by hot soapy water, light or heat, although they may be by very strong sunlight. Oiled silks are the poorest of the coated fabrics: they become brittle under sunlight and heat, and they darken with age. Rubber-coated fabrics are not affected by hot water or dry heat, but become brittle upon exposure to sunlight.

Solid Sheets and Films

Plioilm (a chlorinated rubber film) is not affected by hot soapy water, but is considerably weakened by dry heat and becomes brittle and crumbly when exposed to sunlight.

Sheet rubber is not affected by hot soapy water nor by dry heat; sunlight, however, weakens the rubber and causes loss of elasticity, and a combination of sunlight and dry heat will accelerate the deterioration process. Unless the sheets are of fairly thick construction, deterioration will cause breaks in the material.

Colorfastness & Patterns

The colorfastness to washing and sunlight of all types of shower curtains depends upon the dyestuff used as well as upon the method of application. Since these vary to a great extent, it is advisable for the purchaser to get a guarantee of colorfastness.

Shower curtains, aside from plain white, come in solid colors, all-over repeat designs and panel prints, the latter generally more expensive. The last two may be applied by block printing, by stencil or silk screen, or by hand, in ascending order of cost.

Shower curtains should never be left bunched in one corner while still wet.

¹ Water-repellent fabrics—according to the American Ass'n of Textile Chemists and Colorists—are those which will withstand a "hydrostatic pressure" of 17 centimeters. Waterproof fabrics are those which will withstand a "hydrostatic pressure" of 50 centimeters for one hour without any water leaking through.

MEDICAL SECTION

HAROLD AARON, M. D., SPECIAL MEDICAL ADVISER

MEDICAL CONSULTANTS: Dr. Anton J. Carlson—Chairman, Dep't of Physiology, University of Chicago; Past President, American Physiological Society; Dr. Theodor Rosebury—Assistant Professor of Bacteriology, College of Physicians & Surgeons, and School of Dental and Oral Surgery, Columbia University; Dr. Marlon B. Sulzberger—Ass't Professor of Clinical Dermatology and Syphilology, New York Post-Graduate Medical School, Columbia University; Editor, *Journal of Investigative Dermatology*.

CU's Medical Consultants give technical advice on matters of medicine which lie within their fields. CU is responsible for all opinions concerning social, economic and public health questions.



Copywriters as Physicians

CU's advice to the patient (consumer)
is: be very careful of what you read

WHEN YOUR STOMACH IS UPSET

You get a lot of free advice when your stomach is upset... and only some of it is good. Remember this—

Stomach distress from over-fullness should not be aggravated by drastic, irritating physics or purgatives.

Take soothing Pepto-Bismol instead. It has no laxative action and is not an antacid. Pepto-Bismol helps to quiet the upset, soothes the irritated intestinal walls, so resists intestinal fermentation, gas formation and to relieve simple distress. This soothing prescription is pleasant—you'll like the taste.

10 cents at your druggist's. Or by the dozen at drug store wholesalers.

Norwich

Pepto-Bismol

DR. PEPTO-BISMOL

"You get a lot of free advice . . .

July, 1940

"You get a lot of free advice when your stomach is upset—and only some of it is good," says the Norwich Co. in new and widespread advertisements for *Pepto-Bismol*. Count as bad advice their recommendation to take *Pepto-Bismol*.

Count as good the statement of Dr. Andrew B. Rivers of the Mayo Clinic (echoed by every informed physician): "Dyspepsia [upset stomach] is one of the most frequent causes of man's unhappiness. Dispensers of nostrums, well aware of this fact, are growing rich from the sale of injudiciously recommended medications. . . ." Count as good advice, too, the current advertisement (reproduced here) of the Metropolitan Life Insurance Co., with its emphatic warning against the use of laxatives or medicines for any abdominal pain lasting more than an hour or two.

The label of *Pepto-Bismol*¹ recommends its use for "sour and acid stomach" and other digestive disorders. "Acid indigestion" and "upset stomach" (discussed at length in the *Reports* for October and November 1938) are really symptoms of some underlying disorder.

Occasional attacks may be due to alcohol, sensitivity to tobacco or some particular drug or food, or more often to an emotional upset. There would be no harm in taking *Pepto-Bismol* for such

¹ Active ingredients stated on label are: bismuth subsalicylate, an antacid and constipating drug; salol, a derivative of salicylic acid, long discarded by physicians as a remedy for intestinal disorders; methyl salicylate, the common oil of wintergreen; zinc phenolsulphonate, an astringent drug of little or no value in medicine.

occasional or temporary disorders, particularly since *Pepto-Bismol* may have a mild antacid effect on the stomach. The same effect on the stomach could, of course, be obtained much more cheaply by taking a large pinch of baking soda and a few drops of essence of peppermint.

But "upset stomach" may also be due to more serious acute disorders including acute appendicitis, or to chronic disorders, including gall-bladder infections and gall stones, peptic ulcer, emotional disturbances, heart disease and—most seriously—cancer. Appendicitis is made dangerously worse by use of laxatives or cathartics and it is certainly not relieved by antacids such as *Pepto-Bismol*. The use of any such preparation may, as the Metropolitan's ad makes clear, only serve to delay dangerously the proper diagnosis and treatment of acute and chronic digestive disorders.

When in doubt about the cause of "stomach upset" call a physician. Until his arrival, nothing more potent than sips of water or tea with or without a pinch of bicarbonate should be taken by mouth.



How innocent is a "Stomach-Ache"?

A "STOMACH-ACHE" means something serious.

True, it may be nothing dangerous. But because it can be very serious, we should treat such a warning signal lightly.

▶ All too frequently a severe so-called "stomach-ache" means an acute attack of appendicitis—one of the more important causes of death among children, adolescents, and young adults. Nearly it takes some 15,000 lives in this country.

▶ Many of these lives are lost as a result of "self-treatment." Many could be saved if the following three-point safety rule were observed whenever intense abdominal pain persists for more than an hour or two:

1. Call a doctor.
2. Apply an ice bag and remain quiet.
3. Do not take a laxative, food, or medicine.

The importance of prompt medical attention is clearly indicated in a recent survey of appendicitis cases made by medical authorities. It reveals that the death toll, among those who do not seek medical attention, is alarmingly high.

taken none.

▶ Even if a persistent "stomach-ache" is not appendicitis, it cannot safely be considered innocent. It may mean one of a number of other serious diseases.

▶ When in any doubt whatsoever about abdominal pain, call your physician for safe guidance—and call him in time. Then if serious disease is indicated, an early diagnosis and treatment may speed recovery, reduce the cost of illness, and decrease the possibility of dangerous complications.

Send for Metropolitan's helpful free booklet, "Appendicitis."

Metropolitan Life Insurance Company
(A MUTUAL COMPANY)

Frederick B. Edler,
CHAIRMAN OF THE BOARD

Long A. Lincoln,
PRESIDENT

1 Madison Avenue, New York, N. Y.

Metropolitan Life Insurance Company
1 Madison Avenue, New York, N. Y. 10038
Please send me a copy of your booklet.

DR. METROPOLITAN

. . . and only some of it is good"

Medical Section • 13

The "Fertility Vitamin"

That's what vitamin E has been called, but there's a dearth of facts to prove its right to the title. One fact about vitamin E—and K, too—is that they come easily in a normal diet

MUCH has appeared in newspapers recently about vitamin E and its relation to the glands of internal secretion (endocrine glands), to sterility in men and women, and to certain nervous disorders. As is so often true with "hot" news, there is more zeal than science in these reports.

About 15 years ago it was discovered that when rats were fed a diet deficient in this vitamin, they could not have offspring even though they appeared to be normal in other respects. The male rats became sterile because of degeneration of the sperm-producing tissue of the males; the females failed to carry their young to term. The too facile assumption was then made by various investigators that some cases of sterility in humans were also due to a lack in the diet of vitamin E, which, in fact, became known as the "fertility vitamin."

Women who had frequent miscarriages from no apparent cause were given large amounts of vitamin E in its natural source—wheat germ or wheat-germ oil. Optimistic deductions were drawn by uncritical observers. Unfortunately these deductions have not stood the test of repeated, critical experimentation. Vitamin E may be the "fertility" vitamin for the rat, but there is no conclusive evidence that sterility in woman or in man is due to a deficiency of it.

Although vitamin E has so far been a disappointing failure in the treatment of human sterility, a new field of usefulness for it has been opened up in recent months. During experiments with rats on diets deficient in vitamin E, it was noted that many of the offspring of female rats who had obtained just enough vitamin E to prevent abortion, while outwardly well nourished, suddenly developed muscular paralyses. Such muscular disorders in the offspring could be prevented if the mother obtained a larger amount of vitamin E, and could be relieved or cured if the newborn rats were given supplements of vitamin E. These experiments led naturally to attempts to treat muscular and nerve affections in humans with this vitamin.

So far, encouraging results have been obtained in the treatment of a particular muscular disorder known as "muscular dystrophy" and of a disorder of the spinal cord known as "amyotrophic lateral sclerosis." The latter disease, which ended the career of Lou Gehrig, baseball's

famed "Iron Man," can be halted or considerably ameliorated by the administration of large amounts of vitamin E, or alpha tocopherol.¹ It appears that muscular and nervous system disorders hitherto considered impossible to check or cure are now being hopefully investigated from the point of view of vitamin deficiencies.

Assuming we do need vitamin E, one thing seems clear: we apparently get an amount of it adequate for normal health from a balanced diet.

The richest sources of vitamin E are the embryos of seeds, the germ of wheat, and green leafy vegetables. But the vitamin is also abundant in milk, eggs, meat and vegetable fats. As has so often been emphasized in these articles, all the known vitamins necessary for normal health can be obtained from a diet containing dairy products, eggs, meat, fresh fruits and vegetables and whole-grain bread and cereals.

The more potent sources of vitamin E (such as wheat-germ products or cereals²) can be profitably included in the

¹ In the past few years, at least three substances having the properties of vitamin E have been isolated from wheat-germ oil. These substances are known as the "tocopherols," and one of them, alpha tocopherol, has been synthesized.

² Some of the more popular wheat-germ products and cereals are *Bemax*, *Embo*, *Vitab*, *Vio Bin*, *Squibb's Malted Wheat Germ Extract*. The cost of 333 International Units or 1 milligram of B₁ as derived from these commercial wheat-germ products varies from 6¢ to 10¢; for 1 milligram of B₂ from 11¢ to 30¢. These prices should be compared with those of the B complex preparations listed in the April 1940 *Reports*. Wheat germ may be obtained more cheaply in some parts of the country directly from the millers or mills without paying costs of packaging, labeling, &c.

More to Come

THE accompanying article is the seventh in a series on diet and nutrition—with special reference to vitamins—which has been appearing in the *Reports* since last December. In an early issue much of the information presented in these articles will be summarized, along with an appraisal of multiple-vitamin preparations (*Vi-Syneral*, *Vitamins Plus*, &c.).

normal diet instead of the refined, processed cereals (such as farina, corn flakes, &c.), particularly since the former are also excellent sources of vitamin B₁ or thiamin and fair sources of the other B vitamins. Wheat-germ oil, a highly concentrated extract of the wheat germ, is used experimentally in the treatment of habitual abortion, but so far there is no sound evidence that as a supplement to an adequate diet it will in any way influence human reproduction either in woman or in man.

FURTHER advances in vitamin treatment became possible when the substance known as vitamin K was discovered about 10 years ago. It soon was apparent that vitamin K was not a single mixture but rather a group of substances and that at least one of these (vitamin K₁) is found abundantly in alfalfa and in green leafy vegetables such as spinach and cabbage leaves. Considerable amounts are also present in milk products.

Numerous experiments showed that small amounts of this vitamin are necessary for normal blood clotting. The latter is a complicated process, of which at least two requirements are that vitamin K must be present to a certain extent in food and that bile must be present in the intestines for the absorption of the vitamin. In diseases of the gall-bladder, bile-tract or liver, inadequate or imperfect bile or an absence of bile result in a vitamin K deficiency because the vitamin, even though adequate in the diet, is not absorbed.

It is in the treatment of such diseases, therefore, that vitamin K, combined with bile extracts, has its greatest usefulness. But it is also being used to treat hemorrhages in the newborn. Some infants die because of these hemorrhages, which an adequate amount of vitamin K in the mother's diet would prevent. With the isolation and synthesis of the pure vitamin, it is possible to treat the infants as well and to restore normal clotting properties to the blood.

The normal person apparently need not fear a vitamin K deficiency, since it is found in large amounts in the green leafy vegetables, and withering or yellowing of the leaves appears to have no effect on the vitamin. Little is known of the optimum requirements of human beings for this vitamin and only few foods have been analyzed for their content of it, but it appears that an adequate amount of the vitamin can be obtained by eating daily a salad containing green leafy vegetables or by using them in cooking.

³ See CU's report on cereals, January 1940 *Reports*.

GENERAL SECTION

CONSUMER NEWS AND INFORMATION



"Science in the Service of the Consumer"

Some highlights of a memorable conference on consumer problems

THE services science renders consumers are numerous, and the dependence of consumers on scientists is extensive. For all that, they seldom get together. Last month they did—at Massachusetts State College in Amherst, Mass., for two days, under the joint sponsorship of CU and the Boston-Cambridge Branch of the American Ass'n of Scientific Workers. Self-consciousness was not present. Distinguished speakers did not speak and run; instead, they sat and listened to fellow speakers, joined earnestly in discussion, exchanged opinions with conferees, who asked inexhaustible questions.

General consensus was that the Conference succeeded in pointing up trends and objectives without neglecting immediate problems; that it warranted its title. As suggested by many of those present, the complete transcript of the papers presented will be published (see back cover). Brief excerpts from many of the papers are presented herewith.

"Government Research in the Interest of the Consumer," was discussed by **Dr. Louise Stanley**, Chief, Bureau of Home Economics, U. S. Dep't of Agriculture.

"Economic research . . . has been useful in making us much more realistic about what the problems are, showing what people are buying at different income levels and helping us to face the problem in the low-income group, . . ." said Dr. Stanley.

"If the housewife understood more definitely what certain pieces of equipment could do for her, she wouldn't be so willing to buy. . . . We should get fewer designs and get them into quantity production and so lower the cost . . . so that they will be reachable by the low-income group. . . ."

A subject of direct concern to everyone present, "What the Consumer

Should Know about Vitamins," was discussed by **Dr. Helen Mitchell**, Research Professor of Nutrition, Massachusetts State College. Dr. Mitchell considered the effect, availability and cost of most known vitamins.

"As we go on learning more about our foods we find that situations have changed, processes have changed, and the vitamin intake of the population may have shifted unknowingly," she pointed out. "We know something of what young adults need, yet we know almost nothing of what older people need. . . . Some of the quacks . . . have enough scientific background to make their claims quite misleading. . . . Vitamins are far better from the grocery store than from the drugstore, if possible. I am not, however, ready to condemn vitamin concentrates. They may be very necessary in special conditions. Your Consumers Union has done an excellent job of giving information."

Dr. Theodor Rosebury, Assistant Professor of Bacteriology at Columbia University Medical and Dental School and member of CU's Medical Advisory Committee, talked on "Diet, Oral Hygiene and the Teeth."

"The act of eating a meal," he said, "has the effect of removing the bacteria from the teeth. There are . . . various substances present in the mouth which have the direct function of maintaining the micro-organisms of the mouth at low level. Artificial aids can be looked upon as supplements only to a process which in large measure can take care of itself. We fall into the error that we could not possibly live without a toothbrush. . . ."

Donald E. Montgomery, Consumer's Counsel, U. S. Dep't of Agriculture, answered the question: "Why a Consumer Movement?"

"First, because in the midst of crushing agricultural surplus, our people are not all well fed. Because again . . . too many families live in shameful houses, do without

clothes they need, lack even the sanitary essentials of human living. . . . Thirty million people . . . spend about 6¢ per meal per person, about \$9 per month rent per family, about \$1 per month per person for clothing. . . ."

"Three parts of consumer protection are: (1) Protection against all price increases that can be prevented. (2) Aid in adjusting consumer expenses and use of goods to such shortages as cannot be avoided. (3) Fullest possible use in productive employment of those now unemployed—to the end that increased output of unconsumable goods for defense purposes shall be added to and not subtracted from production of consumer goods for living purposes. . . ."

Dr. John M. Cassels, Director of the Institute for Consumer Education, Stephens College, Columbia, Mo., spoke at a dinner meeting, on "The Belated Application of Science to Consumer Needs." Excerpt:

"There are two areas in which consumers must see that science is applied to their problems. First, consumers need to secure a good deal of the information which producers already have about their products, but which they do not tell. . . . Second, consumers need to find out certain facts which are . . . of little or no interest to producers. . . . Consumers want to know the results of performance tests. . . . It is necessary for the users to have their own research done. . . . As long as the work of Consumers Union is carried on as it has been to date with the integrity of a scientific undertaking, its long-run contribution to human welfare is assured and all the difficulties met with day by day can be accepted."

Dr. C. Fayette Taylor, Professor of Automotive Engineering, Massachusetts Institute of Technology discussed "The Automobile from the Consumer's Viewpoint."

"The American automobile is a tremendous lot of machinery for your money," he stated. "On the other hand, I don't think that there is any doubt that it could be more if it weren't for such items as the high cost of advertising and . . . the question of style. . . . The present models of the low-priced cars . . . give us practically as good transportation as it is possible for us to buy. Anything more expensive than these, I would say, would come in the realm of psychological satisfaction."

"The Need for Standards and Specifications in Consumer Goods," was discussed by **Dr. Paul G. Agnew**, Secretary of the American Standards Ass'n.

"The demand for standards," Dr. Agnew said, "lies at the very heart of the consumer movement. . . . As applied to consumer goods there are, basically, two kinds of standards: the first of these has to do with sizes. . . . In the second kind of standards, the characteristics of products, their durability, serviceability—sometimes their con-



DR. GERALD L. WENDT Director, Nat'l Advisory Committees for New York World's Fair 1940; former Dean of School of Chemistry & Physics, Pennsylvania State College



DR. NED H. DEARBORN Dean of Division of General Education, New York University; Vice-president, American Federation of Teachers



DR. RAYMOND E. KIRK Head of Dep't of Chemistry, Brooklyn Polytechnic Institute; former President, New York Chapter, American Institute of Chemists

struction details—are specified. Most standards of this kind are in essence, merely technical definitions . . . intended to convey the same meaning to buyer and to seller. . . . The machine age has made it necessary to have standards."

Dr. Warren E. Emley, Chief, Organic and Fibrous Materials Division, National Bureau of Standards, told the Conference "What Recent Textile Developments Mean to Consumers."

He discussed the development of new standards to determine the feel and appearance of fabrics, as well as their serviceability. He emphasized that while in times past the tendency was to base textile standards on fiber content and construction, the trend is toward performance standards. The consumer's real concern, said Dr. Emley, is not what the fabric is made of, but how it looks, feels and performs. Another important job of textile scientists, he added, is to help manufacturers develop more satisfactory synthetic fibers, and new ways of treating natural fibers so as to produce better fabrics for less money.

Herbert Evans, Vice-President, Consumer Distribution Corp., speaking on "Quality Control in Consumers' Cooperatives," stressed the role of the cooperatives as "a laboratory for standards and consumer education."

"The job of the cooperative enterprise," he said, "is to help the consumer members to get what they decide they want. . . . People have been fooled so much that they are almost afraid to trust themselves. . . . Many cooperatives are growing as much because of informative labeling as anything else. . . ."

"I think Consumers Union has done a grand job," he observed. "Their reports have pushed the people and urged them to begin to see how they can get their money's worth. The best way was to get it in a store of their own."

"What the Consumer Should Know about Cosmetics," was reviewed by **Dr. Marion B. Sulzberger**, editor of

the *Journal of Investigative Dermatology*, author of many textbooks and scientific articles, and a member of CU's Medical Advisory Committee.

Dr. Sulzberger discussed cosmetic allergies, care of the hair and scalp, permanent waving, dry and greasy skin, special problems of adolescence and old age. Said he: "If you have a disease or disorder requiring treatment, you must go to a physician and not rely on cosmetics. . . . Cosmetics cannot be expected to cure anything. You cannot, therefore, expect to get your money's worth so far as permanent actual improvement of appearance is concerned. But while one cannot expect much good, the consumer has the right to insist that cosmetics should do no harm. . . ."

Dr. Henry E. Sigerist, Professor of the History of Medicine, Johns Hopkins University, emphasized the need for "The Reorganization of Medical Care."

"The people's health is the concern of the people themselves," he stated. "They must want health. They must work for it and fight for it if necessary. . . . Large sections of the population today have no medical care, or not enough. . . . We have a new type of society which has to be saved by a new medical science. . . . We have a national program. We had a bill which meant to put this program into practice. It was the Wagner Health Bill which has been killed."

"Groups like yours," he told his audience, "must assume leadership. They must write to their congressmen and they must pass resolutions and see that these things are not forgotten. We need not only guns and airplanes, but we need health as well."

Dr. Raymond E. Kirk, Head of the Dep't of Chemistry, Brooklyn Polytechnic Institute, closed the sessions with a discussion on "What the Science of the Future Holds for the Consumer."

"I don't know what the future holds in science," he said, "Who does? . . . But I can always tell the consumer—'You ain't seen nothin' yet.' We can, however, read the past. We can . . . discern the trends that will likely continue. . . . First, there is a very recognizable trend towards cooperation and organization. . . . I see a trend toward carefully specified production. . . . Another interesting trend in industrial chemistry is the tendency toward the modification of natural products . . . certain needs are being met more carefully by modifications of the material."

Others who participated included officers and directors of CU, who spoke at and chaired several of the sessions; Professor Bart J. Bok of the Dep't of Astronomy, Harvard University, who, as a member of the Executive Committee of the Boston-Cambridge Branch of the American Ass'n of Scientific Workers, described his organization to the Conference; Professor Philip Gamble and Dean Edna Skinner of Massachusetts State College. Professor Gamble opened the Conference on behalf of the college, Dean Skinner was chairman of the first session.

CU's Election and Fourth Annual Meeting

9,832 CU members cast their ballots in the recent election of CU Directors (443 ballots were declared invalid). New Directors elected: Dr. Ned H. Dearborn, Dr. Raymond E. Kirk, Dr. Gerald Wendt. Re-elected: Dr. Jerome Davis, Paul Kern, Dexter Masters, Dr. Goodwin Watson. Complete results:

Jerome Davis	7,419	Walter Rauten-	
Dexter Masters	7,342	strauch	4,071
Paul Kern	6,357	Reed Harris	3,818
Ned H. Dear-		Frank E. Beube	2,632
born	6,032	Max Yergan	2,317
R. E. Kirk	5,973	Morris Watson	2,173
Gerald Wendt	5,325	Leopold Infeld	2,087
Goodwin Wat-		L. Rubenstein	1,211
son	4,985		

CU records with deep regret the death of Harriet Silverman, a nominee to CU's Board. Miss Silverman's ballots were not counted.

At CU's Fourth Annual Meeting, held on the second day of the Conference, reports on the organization's work were heard from President Colston Warne, Director Arthur Kallet, Treasurer Bernard Reis, Special Technical Consultant William Malisoff, Publications Director Dexter Masters, Special Medical Adviser Harold Aaron, Staff Representative Lydia Altschuler.

Partial tabulations of answers to the questionnaire recently mailed to all members were given (a full summary will appear in the *Reports*). A resolution was adopted offering support and cooperation to Miss Harriet Elliott, Consumer Representative on the President's Advisory Commission on National Defense "in such actions as she may initiate to the end that the fulfillment of the defense program shall not result in a decline of the standard of living of consumers."

Your Telephone Bill: IV

The fascinating story of the fight for lower rates in St. Paul . . . what the company did and is doing . . . how consumers organized to protect their interests

FOURTH ARTICLE IN A SERIES WRITTEN FOR CU by MORITZ HOWARD

THE Bell System has a pat answer to claims that your telephone bill is too high. Under the Fourteenth Amendment to the Constitution, as interpreted by the courts, a regulated corporation has a constitutional right to earn a fair return—6% or 7%—on the fair value of its property. With reams of complicated figures, the Bell System is able to show that neither as a whole nor in any of its parts does it earn more than such a fair return.

When the figures are challenged on the basis of the Federal Communications Commission's recent investigation, the Bell System replies that the FCC investigation was unfair and one-sided. Fair rates are guaranteed, say Bell executives, through the constant supervision by State Public Service Commissions.

In this article we shall examine a typical case before a State commission—a case involving telephone rates in St. Paul, Minn. The St. Paul case is especially worth examining because, after eight years of investigation and litigation, it is now nearing completion; because the 7,000-page record fully covers arguments for both sides; and because the case is now being pushed to completion by direct legal action on the part of a small group of consumers, acting "on behalf of themselves and all others similarly situated."

The facts and figures involved apply only to St. Paul; but the legal principles and Bell System tactics parallel principles and tactics in other rate cases.

IN 1932, the State Public Service Commission, called in Minnesota the Railroad and Warehouse Commission, challenged the rates charged in St. Paul by the Tri-State Telephone & Telegraph Co., a Bell System subsidiary.

The company came before the Commission with what purported to be a clear case against any rate cut at all. Expert telephone company witnesses showed that the company's St. Paul property was worth at least \$17,000,000¹

¹ Reproduction cost as of 1931, the test year of the rate order still in litigation. Figures throughout are for the test year 1931.

new; that this property had depreciated by only \$1,500,000, and hence was still worth \$15,500,000.² A fair return on this \$15,500,000 amounted to at least 6%, or \$930,000. Actually, the company insisted, it was earning only \$909,000 a year; hence any rate reduction would be confiscatory.

These were the company's figures. The Commission, sitting as a sort of tribunal, heard both sides of the case, granted both sides the right to testify, to introduce exhibits, to cross-examine witnesses, and to file briefs.

The \$17,000,000 value new which the company placed upon its property was based upon "tangibles"—wires, poles, land, equipment, &c.—and "intangibles." In itemizing its tangibles, the company included \$103,000 of property which was not being used at all, plus \$151,000 of property not used to render telephone service.

The company valued its tunnels by estimating 594 bricks per cubic yard; it is physically impossible to lay more than 499 bricks per cubic yard. On some material the company used prices which included cost of delivery, then added 18.5% for delivery.

But the real jokers came under the heading of "intangibles." For the Bell System claims a constitutional right to a fair return not merely on money actually invested in plant and equipment, but also on such intangible items as "interest during construction," "cost of raising capital," &c.

The company argued, for example, that if there were no telephone plant in St. Paul, it would take five years to build one. During those hypothetical years it would have to borrow millions of hypothetical dollars at a hypothetical rate of 7½%. This hypothetical interest would total \$1,200,000, plus a hypothetical cost of \$450,000³ to raise the capital. The company proposed to add 6% of this hypothetical \$1,650,000 to St. Paul's actual telephone bills each year.

² At one point the company claimed even higher value. By the end of the hearings, however, it was willing to compromise on \$14,000,000.

³ The \$450,000 claim was subsequently withdrawn.

Other "intangibles" brought the total under this heading to some \$4,000,000.

When all the surplusage had been cleared away, the actual value new of the company's St. Paul plant was found to be, not \$17,000,000, but \$12,000,000. The company, in short, had overpriced its St. Paul property by just 40%.

BUT that was only a beginning. From the actual value new, accrued depreciation had to be deducted.

An earlier article in this series⁴ has described the Bell System's self-contradictory depreciation policies. A few examples from the St. Paul case should illuminate the pattern.

The central office equipment in St. Paul's "Cedar exchange" was installed in 1911; each year thereafter 6.9% of its cost was paid by consumers for annual depreciation expense. After 20 years, consumers had actually repaid 138% of the original cost. Yet in valuing this equipment for rate-making purposes, the company claimed that it had depreciated only 15%.

St. Paul consumers had paid many millions into the company's depreciation reserve, yet the company claimed that through the years its property had depreciated only \$1,500,000. The Commission found that the property had actually depreciated by \$3,500,000. The courts affirmed these findings.

The net effect of these "corrections" of company figures was to reduce "fair

⁴ CU Reports for March 1940.

CONSUMERS UNION

17 Union Square W., N. Y. C.

I am enclosing \$....., for which please send me the material I have checked below:

- ☐ "False Security," by Bernard J. Reis—Special Price, \$1.
- ☐ "Good Health and Bad Medicine," by Harold Aaron, M.D.—Price for CU members, \$1.50.
- ☐ "Our Common Ailment," by Harold Aaron, M.D.—Price for CU members, \$1.
- ☐ Special Combination Offer: "Good Health and Bad Medicine" plus "Our Common Ailment"—\$2.25
- ☐ "Life Insurance: Investing in Disaster"—Price for CU members, 60c
- ☐ "Wines & Liquors," 1940 edition—50c (Not knowingly sold to minors)
- ☐ "Feminine Hygiene"—25c (Please initial this statement: I am married and use prophylactic materials on advice of a physician.....)

NAME.....

ADDRESS

75PO



IT PAYS TO ORGANIZE

Facsimile of check refunding telephone overcharges to a St. Paul consumer. Total amount returned approximated \$2,000,000. Consumers are suing for further refunds

return" from \$930,000 to \$510,000. Here is the calculation:

	COMPANY'S CLAIM	FACTS AS FOUND
Gross value of property	\$17,000,000	\$12,000,000
Less depreciation	1,500,000	3,500,000
Fair value of property	\$15,500,000	\$8,500,000
Fair return to company (6% of value)	\$930,000	\$510,000

But this is still only half the story. After establishing the fair return to which a telephone company is legally entitled, it is necessary to find out just

what return the company is actually receiving.

Here was the St. Paul company's claim:

Gross revenues	\$3,434,000
Less gross expenses	2,525,000
Net earnings	\$909,000

These figures, like the company's claim to a \$17,000,000 property value, were subject to "correction."

The company had failed to include as revenue any part of its income from long-distance calls; all such revenue was syphoned directly into the unregulated holding company, A.T.&T. When adjustments were made for this and other omissions, the actual gross revenues were found to exceed the company's figure by \$444,000.

Just as revenues had been understated, so expenses were overstated. Annual depreciation expenses, for example, were set at \$548,000 a year. The Commission and courts reduced this figure to \$323,000 a year.

Among expenses was an item of \$115,000 for the testimony, at \$200 a day, of the company's chief witness in the very case in question. Judge Gustavus Loevinger of the Minnesota District Court threw out this charge, commenting:

The commission might have concluded that some of the methods employed by Sloan [the \$200-a-day Bell System witness] involved an undue inflation of the rate base, and contemplated an intent to mislead the commission.

Among other "expense" items which the company sought to add to telephone bills were "dues and donations" to such organizations as the Chamber of Commerce of the U. S. and the Citizens' Alliance—the latter a notorious Minnesota anti-labor organization dedicated to maintenance of the open shop.

By omitting improper items, the company's allowable expenses were slashed

by nearly \$400,000; the slash affected earnings as follows:

	COMPANY'S CLAIM	FACTS AS FOUND
Gross revenues ..	\$3,434,000	\$3,877,000
Less gross expenses	2,525,000	2,136,000
Net revenues	\$909,000	\$1,741,000

The company, in short, was actually earning nearly twice as much as it admitted. Instead of receiving \$21,000 less than a fair annual return, it was getting \$1,231,000 more than a fair annual return, as the following table indicates:

COMPANY'S CLAIM	
Fair return (6% of \$15,500,000)	\$930,000
Actual net revenues	909,000
Rates too low by	\$21,000
FACTS AS FOUND	
Actual net revenues	\$1,741,000
Fair return (6% of \$8,500,000)	510,000
Rates too high by	\$1,231,000

ST. PAUL telephone bills totaled \$3,877,000 a year. Reducing rates by \$1,231,000 would involve a rate cut of approximately 30%.

The Commission, knowing that in all probability any rate reduction order would be challenged in the courts, played safe. It reduced rates by an average of only 25%. The ordinary one-party business telephone was reduced from \$10 a month to \$7 a month; the one-party residence phone from \$3.50 to \$2.75.

The company appealed. The District Court, after reviewing the evidence before the Commission and giving the company the benefit of many doubts, found the rate cut justified. The company appealed again. The State Supreme Court affirmed the District Court opinion.

Investigation and hearings before the State Commission had taken four years. The appeals consumed three years more. By the Spring of 1939, however, a 25% rate reduction seemed within grasp of St. Paul consumers. In view of the full record before the Commission and the detailed opinions of the State courts, it seemed unlikely that the company would or could get the U. S. Supreme Court to review the case. But the company had one more string to its bow—this time a political string.

In the Fall of 1938 a "conservative" administration had been elected in Minnesota. Shortly after this political change, company officials began a series of "cloistered conferences" with the new Attorney-General and members of the State Commission. No public notices of these conferences were given; no representatives of telephone users or of the City of St. Paul were present; no record was kept.

CONSUMERS UNION

17 Union Square W., N. Y. C.

I am enclosing \$..... for which please

reserve me copies of "Science in the Service of the Consumer" now in preparation. (Single copies are \$1 each; lower prices on quantity orders will be given on request.)

NAME

ADDRESS

7SSCO

CONSUMERS UNION

17 Union Square W., N. Y. C.

I am enclosing \$1.50 for which

☐ Enroll me as a member of Consumers Union for one year.

☐ Renew my membership for one year. I agree to keep confidential all material so designated.

NAME

ADDRESS

7CUO

Following these secret conferences, however, the Commission entered a new rate order, increasing the one-party business rate from \$7 to \$8.25, the one-party residence rate from \$2.75 to \$3, and other rates in even greater proportion. D. F. Jurgenson, the engineer whose work had led to justification of the rate cut, was peremptorily dismissed.

As a contribution to irony, the St. Paul rate increase was disguised as a supposed rate cut. During the years of litigation, the company had continued to maintain its former excessive rates. Now it accepted the new Commission rate schedule, reduced telephone bills, and even mailed refund checks to cover a three-year retroactive reduction. Few consumers realized that the new rates were actually on the average 17% higher than the rates set by the Commission in 1936 and approved by the courts.

SEVERAL GROUPS of consumers had been organized in St. Paul to fight for lower telephone rates. These consumer groups did not take defeat lying down. Led by David J. Erickson, the deputy Attorney-General who had prosecuted the State's case against the company and who had also been summarily dismissed, they brought suit to set aside the new rate increase.

The suit was brought on behalf of two telephone users and "all others similarly situated."

Simultaneously, petitions were filed with Minnesota's Governor Stassen demanding removal of the commissioners on charges of "utter incompetence," or worse, under a statute requiring that hearings be held on such petitions. So far Governor Stassen has failed either to hold hearings or to act on the charges.

The company and public officials, now standing shoulder to shoulder against organized consumers, did not deny the material facts alleged. The Attorney-General argued chiefly that the consumers had no legal remedy, since the statutes guaranteeing a fair procedure "were designed to protect the utility" rather than consumers.

The District Court thought otherwise. Early this year it ordered that all charges in excess of those set in 1936 and approved by the courts be refunded, with interest at 6%.

The company has once more appealed to the State Supreme Court. Thus the proceedings begun in 1932 may drag on for another year or more.

But St. Paul consumers say that they have learned one lesson from the eight-year battle: *it pays to organize*. The concluding article in this series will outline a program of organization for telephone users.

War & Prices Eleventh of CU's special reports on the effects of war on prices & products

Wholesale Prices

THE wholesale price index of 28 basic commodities, compiled by the Bureau of Labor Statistics, started tumbling on May 14, reached low points for the year around the first of June, and rose very slowly during the first weeks of that month. At the end of June wholesale prices of these commodities stood 10.1% higher than before the European war broke out. At no point since September 2 have they been less than 9.4% higher. Peaks were reached in September, October and December. The execution of the defense program is expected to lead to new price increases.

Wheat and flour prices were a little lower late this June than a year ago. Wheat futures might have sunk still lower, it has been stated in the *New York Times*, but for the intervention of the Dep't of Agriculture which used its influence to peg the prices. Lamb, pork and lard were lower on the wholesale market than a year ago. Wool, cotton, silk and rubber were higher.

Retail Food Prices

The retail cost of food increased .8% between April 16 and May 14. Food costs were 3.2% higher than a year ago. Some foods, among them meat, eggs, coffee, and lard were lower than a year ago, but they were overbalanced by the products which have gone up in price, such as fresh fruits and vegetables, cereals and bakery products, canned salmon and dairy products. The price of bread, which went up in many cities last Winter on the score of increased flour costs, has not been decreased to meet the present low wholesale flour prices.

Department Store Prices

Retail prices in department stores have been fairly constant since January. Prices now are 4.1% above the level of a year ago, according to the Fairchild index.

The department store price index has not fluctuated nearly so widely as the wholesale index, but has registered a slow rise up to the present point, which has remained constant for three months. One reason that retail prices have risen slowly, while wholesale prices of raw or semi-manufactured commodities have registered sharp increases, is that the cost of raw materials represents only a part of the cost of the product at retail. Labor and distribution costs plus profits make up the balance.

Strong buyer resistance has probably been an important restraining influence. Women's silk hosiery, for example, was advanced because of higher costs of silk, but had to be reduced again. Even the price cuts did not bring the anticipated increased business—which should have a restraining influence on hosiery prices this Summer. Nylon has not been an important factor in the price decrease, due to the limited supplies available.

Defense Taxes Raise Living Costs

The defense tax program has lowered the income tax exemption to include new low-income groups. It has also raised the prices consumers pay on a number of products, as follows:

Gasoline	1/2¢ a gallon
Lubricating Oil	1/2¢ a gallon
Electrical Energy	1/2%
Radios	1/2%
Mechanical Refrigerators	1/2%
Automobiles	1/2%
Amusements	10%
Playing Cards	1¢ a pack
Cigarettes	1/2¢ a pack
Liquor (100 proof)	30¢ a quart

The increased Federal liquor tax actually amounts to only 18.7¢ a quart, not 30¢. The additional 11.3¢ is being levied by distillers and distributors "to cover increased costs connected with the new tax." Consumers may wonder how the costs can mount so high.¹ Perhaps a slump in liquor purchasing would lead to revised costs—and lower prices.

The new taxes mean that a single person earning \$16 a week (which is considerably below a living wage) will face two kinds of cut in his living standards. In the first place he will pay an income tax. In the second place he'll find the cost of many necessary products increased, both through taxation and through price increases due to the war and defense program.

As we go to press, Secretary Morgenthau is to confer with Congressional committees over some form of excess profits tax. It may be significant, however, that Senator LaFollette's proposal of a 20% tax on profits in excess of 8% and 40% on profits in excess of 20% has already been quietly dropped in committee.

¹ At some bars the price of Scotch highballs has been increased 5¢ because of the new tax. Assuming 16 drinks to a fifth-gallon bottle (average for many bars), this represents an addition of 80¢ per bottle, or \$4 per gallon—at which rate it seems more profitable to sell taxes than liquor.

10,000 MEN AND WOMEN BOUGHT THIS BOOK . . .

CU members bought it at a special \$1.40 price . . . others bought it at the publisher's price of \$2.75. Now, by arrangement with publishers and author, CU can offer "False Security" to CU members **for just \$1.**

Published three years ago, "False Security" has sold steadily ever since. The uncertainties and complexities of present wartime conditions make it **more valuable right now than ever!**

Do you count on the SEC to safeguard your investments? Read over this recent statement by Jerome Frank, Chairman of the Securities Exchange Commission:

"If somebody came in (to the SEC), registered securities, and said he proposed to embezzle every Thursday, there is nothing in our statutes that would permit us to prevent him from selling them, after the legal waiting period of 20 days."—*New York World-Telegram*, February 6, 1940.



"False Security," by Bernard Reis, Executive Director of the American Investors Union, Treasurer of CU, and a Certified Public Accountant of long experience, shows how your sav-

ings can be taken from you in a perfectly legal manner. It names names and cites actual cases . . . tells the plain investor in plain language what he is up against.

"Mr. Reis' book is an **anatomy of grand larceny** as practiced by the better classes," said *The Nation*.

"Written to make clear to plain people the meaning of financial terms and transactions . . . **remarkably readable.** It will be of value to any investor," according to the *Book of the Month Club* recommendation.

The *New York Times* said "False Security" was "**extremely valuable** for the information and guidance it contains."

The *Yale Law Journal* referred to Mr. Reis' "faculty of combining **simplicity** of statement with **accuracy** of essential detail."

"Blistering," said the *Christian Science Monitor*. "Startling," added the *New Republic*.

CU members who have occasion to go shopping for investments will find "False Security" an invaluable guide. Now—at \$1—it is one of the most profitable investments the prospective investor can make.



Dr. Helen Mitchell, authority on nutrition, brings home some facts about vitamins to an engrossed audience at CU's Conference.

"MUST" READING for CU MEMBERS

Science in the Service of the Consumer

We are publishing, as a bound volume, the papers of the distinguished speakers who contributed to the conference sponsored last month by CU and the Boston-Cambridge Branch of the American Ass'n of Scientific Workers (see page 15). It will be a book that no CU member should miss.

In the pages of this unique volume you will find an outstanding authority on nutrition giving you facts you need to know about vitamins and the role they really play in your diet. . . .

★ an eminent dental bacteriologist summarizing the best available scientific knowledge on important aspects of dental care. . . .

★ a nationally famous dermatologist telling consumers what cosmetics are and aren't . . . can and can't do . . .

★ a professor of automotive engineering from the country's greatest technical institution looking at automobiles from a consumer's viewpoint. . . .

★ a world-renowned medical historian analyzing health needs and discussing ways and means of meeting them.

You will find provocative comments on developments of utmost interest to consumers by three experts of the U. S. Government . . . an eye-opening picture of the application of science to consumer needs by the director of one of America's great experiments in consumer education . . . and more.

Here is a book which marks an important milestone in the progress of consumer education . . . which can pay for itself many times over with its day-to-day usefulness.

It will cost \$1. Reserve your copy now.

USE ORDER FORM ON PAGE 17 **USE ORDER FORM ON PAGE 18**